



## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

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Lauwereys, Marc Josef  
Laroche, Yves Rene  
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Gansemans, Yannick Georges Jozef  
Moyle, Matthew  
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- (ii) TITLE OF INVENTION: NEMATODE-EXTRACTED SERINE PROTEASE  
INHIBITORS AND ANTICOAGULANT  
PROTEIN
- (iii) NUMBER OF SEQUENCES: 356
- (iv) CORRESPONDENCE ADDRESS:
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Suite 4700  
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(E) COUNTRY: U.S.A.  
(F) ZIP: 90071
- (v) COMPUTER READABLE FORM:
- (A) MEDIUM TYPE: 3.5" Diskette, 1.44 Mb  
storage  
(B) COMPUTER: IBM Compatible  
(C) OPERATING SYSTEM: IBM P.C. DOS 5.0  
(D) SOFTWARE: Word Perfect 5.1
- (vi) CURRENT APPLICATION DATA:
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- (A) APPLICATION NUMBER: PCT/US95/13231  
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(viii) ATTORNEY/AGENT INFORMATION:

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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 234 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

AAGGCATACC	CGGAGTGTGG	TGAGAATGAA	TGGCTCGACG	ACTGTGGAAC	TCAGAAGCCA	60
TGCGAGGCCA	AGTGCAATGA	GGAACCCCT	GAGGAGGAAG	ATCCGATATG	CCGCTCACGT	120
GGTTGTTTAT	TACCTCCTGC	TTGCGTATGC	AAAGACGGAT	TCTACAGAGA	CACGGTGATC	180
GGCGACTGTG	TTAGGAAGA	AGAATGCGAC	CAACATGAGA	TTATACATGT	CTGA	234

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 228 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

AAGGCATACC	CGGAGTGTGG	TGAGAATGAA	TGGCTCGACG	TCTGTGGAAC	TAAGAAGCCA	60
TGCGAGGCCA	AGTGCAATGA	GGAAGAGGAG	GAAGATCCGA	TATGCCGATC	ATTTTCTTGT	120
CCGGGTCCCC	CTGCTTGCGT	ATGCGAAGAC	GGATTCTACA	GAGACACGGT	GATCGGCGAC	180
TGTGTTAAGG	AAGAAGAATG	CGACCAACAT	GAGATTATAC	ATGTCTGA		228

(2) INFORMATION FOR SEQ ID NO:3:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 461 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 22...321

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GAATTCGCT ACTACTCAAC A ATG AAG ATG CTT TAC GCT ATC GCT ATA ATG	51
Met Lys Met Leu Tyr Ala Ile Ala Ile Met	
1 5 10	
TTT CTC CTG GTA TCA TTA TGC AGC GCA AGA ACA GTG AGG AAG GCA TAC	99
Phe Leu Leu Val Ser Leu Cys Ser Ala Arg Thr Val Arg Lys Ala Tyr	
15 20 25	
CCG GAG TGT GGT GAG AAT GAA TGG CTC GAC GAC TGT GGA ACT CAG AAG	147
Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Asp Cys Gly Thr Gln Lys	
30 35 40	
CCA TGC GAG GCC AAG TGC AAT GAG GAA CCC CCT GAG GAG GAA GAT CCG	195
Pro Cys Glu Ala Lys Cys Asn Glu Glu Pro Pro Glu Glu Glu Asp Pro	
45 50 55	
ATA TGC CGC TCA CGT GGT TGT TTA TTA CCT CCT GCT TGC GTA TGC AAA	243
Ile Cys Arg Ser Arg Gly Cys Leu Leu Pro Pro Ala Cys Val Cys Lys	
60 65 70	
GAC GGA TTC TAC AGA GAC ACG GTG ATC GGC GAC TGT GTT AGG GAA GAA	291
Asp Gly Phe Tyr Arg Asp Thr Val Ile Gly Asp Cys Val Arg Glu Glu	
75 80 85 90	
GAA TGC GAC CAA CAT GAG ATT ATA CAT GTC T GAACGAGAAA GCAACAATAA CC	344
Glu Cys Asp Gln His Glu Ile Ile His Val	
95 100	
AAAGGTTCCA ACTCTCGCTC TGCAAATCG CTAGTTGGAT GTCTCTTTTG CGTCCGAATA	404
GTTTTAGTTG ATGTTAAGTA AGAACTCCTG CTGGAGAGAA TAAAGCTTTC CAACTCC	461

## (2) INFORMATION FOR SEQ ID NO:4:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

```

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Asp
 1           5           10
Cys Gly Thr Gln Lys Pro Cys Glu Ala Lys Cys Asn Glu Glu
15           20           25
Pro Pro Glu Glu Glu Asp Pro Ile Cys Arg Ser Arg Gly Cys
30           35           40
Leu Leu Pro Pro Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg
45           50           55
Asp Thr Val Ile Gly Asp Cys Val Arg Glu Glu Glu Cys Asp
60           65           70
Gln His Glu Ile Ile His Val
75

```

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 455 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 22...315

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

```

GAATTCGCT ACTACTCAAC A ATG AAG ATG CTT TAC GCT ATC GCT ATA ATG      51
                        Met Lys Met Leu Tyr Ala Ile Ala Ile Met
                        1           5           10
TTT CTC CTG GTG TCA TTA TGC AGC ACA AGA ACA GTG AGG AAG GCA TAC      99
Phe Leu Leu Val Ser Leu Cys Ser Thr Arg Thr Val Arg Lys Ala Tyr
                        15           20           25
CCG GAG TGT GGT GAG AAT GAA TGG CTC GAC GTC TGT GGA ACT AAG AAG     147
Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Val Cys Gly Thr Lys Lys
                        30           35           40
CCA TGC GAG GCC AAG TGC AGT GAG GAA GAG GAG GAA GAT CCG ATA TGC     195
Pro Cys Glu Ala Lys Cys Ser Glu Glu Glu Glu Glu Asp Pro Ile Cys
                        45           50           55
CGA TCA TTT TCT TGT CCG GGT CCC GCT GCT TGC GTA TGC GAA GAC GGA     243
Arg Ser Phe Ser Cys Pro Gly Pro Ala Ala Cys Val Cys Glu Asp Gly
                        60           65           70

```



TTC TAC AGA GAC ACG GTG ATC GGC GAC TGT GTT AAG GAA GAA GAA TGC 291  
Phe Tyr Arg Asp Thr Val Ile Gly Asp Cys Val Lys Glu Glu Glu Cys  
75 80 85 90

GAC CAA CAT GAG ATT ATT CAT GTC TGAACGAGAG AGCAGTAATA ACCAAAGGTT C 346  
Asp Gln His Glu Ile Ile His Val  
95

CAACTTTCGC TCTACAAAAT CGCTAGTTGG ATTTCTCCTT TCGTGCGAA TAGTTTTAGT 406  
TGATATTAAG TAAAACCTCC TGTGAAGAG AATAAGCTT TCCAACCTC 455

## (2) INFORMATION FOR SEQ ID NO:6:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Val Cys Gly  
1 5 10 15

Thr Lys Lys Pro Cys Glu Ala Lys Cys Ser Glu Glu Glu Glu Glu Asp  
20 25 30

Pro Ile Cys Arg Ser Phe Ser Cys Pro Gly Pro Ala Ala Cys Val Cys  
35 40 45

Glu Asp Gly Phe Tyr Arg Asp Thr Val Ile Gly Asp Cys Val Lys Glu  
50 55 60

Glu Glu Cys Asp Gln His Glu Ile Ile His Val  
65 70 75

## (2) INFORMATION FOR SEQ ID NO:7:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu  
1 5 10 15

Asp Asp Cys Gly Thr Gln Lys Pro Cys Glu Ala Lys Cys Asn Glu Glu  
20 25 30

Pro Pro Glu Glu Glu Asp Pro Ile Cys Arg Ser Arg Gly Cys Leu Leu  
           35                          40                          45

Pro Pro Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg Asp Thr Val Ile  
       50                          55                          60

Gly Asp Cys Val Arg Glu Glu Glu Cys Asp Gln His Glu Ile Ile His  
   65                          70                          75                          80

Val

## (2) INFORMATION FOR SEQ ID NO:8:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 79 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu  
   1                          5                          10                          15

Asp Val Cys Gly Thr Lys Lys Pro Cys Glu Ala Lys Cys Ser Glu Glu  
           20                          25                          30

Glu Glu Glu Asp Pro Ile Cys Arg Ser Phe Ser Cys Pro Gly Pro Ala  
       35                          40                          45

Ala Cys Val Cys Glu Asp Gly Phe Tyr Arg Asp Thr Val Ile Gly Asp  
   50                          55                          60

Cys Val Lys Glu Glu Glu Cys Asp Gln His Glu Ile Ile His Val  
   65                          70                          75

## (2) INFORMATION FOR SEQ ID NO:9:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 711 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

(ix) FEATURE:

(A) NAME/KEY: Coding Sequence

(B) LOCATION: 21...590

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GAATTCACTA TTATCCAACA	ATG GCG GTG CTT TAT TCA GTA GCA ATA GCG	50
	Met Ala Val Leu Tyr Ser Val Ala Ile Ala	
	1 5 10	
TTA CTA CTG GTA TCA CAA TGC AGT GGG AAA CCG AAC AAT GTG ATG ACT	98	
Leu Leu Leu Val Ser Gln Cys Ser Gly Lys Pro Asn Asn Val Met Thr		
	15 20 25	
AAC GCT TGT GGT CTT AAT GAA TAT TTC GCT GAG TGT GGC AAT ATG AAG	146	
Asn Ala Cys Gly Leu Asn Glu Tyr Phe Ala Glu Cys Gly Asn Met Lys		
	30 35 40	
GAA TGC GAG CAC AGA TGC AAT GAG GAG GAA AAT GAG GAA AGG GAC GAG	194	
Glu Cys Glu His Arg Cys Asn Glu Glu Glu Asn Glu Glu Arg Asp Glu		
	45 50 55	
GAA AGA ATA ACG GCA TGC CTC ATC CGT GTG TGT TTC CGT CCT GGT GCT	242	
Glu Arg Ile Thr Ala Cys Leu Ile Arg Val Cys Phe Arg Pro Gly Ala		
	60 65 70	
TGC GTA TGC AAA GAC GGA TTC TAT AGA AAC AGA ACA GGC AGC TGT GTG	290	
Cys Val Cys Lys Asp Gly Phe Tyr Arg Asn Arg Thr Gly Ser Cys Val		
	75 80 85 90	
GAA GAA GAT GAC TGC GAG TAC GAG AAT ATG GAG TTC ATT ACT TTT GCA	338	
Glu Glu Asp Asp Cys Glu Tyr Glu Asn Met Glu Phe Ile Thr Phe Ala		
	95 100 105	
CCA GAA GTA CCG ATA TGT GGT TCC AAC GAA AGG TAC TCC GAC TGC GGC	386	
Pro Glu Val Pro Ile Cys Gly Ser Asn Glu Arg Tyr Ser Asp Cys Gly		
	110 115 120	
AAT GAC AAA CAA TGC GAG CGC AAA TGC AAC GAG GAC GAT TAT GAG AAG	434	
Asn Asp Lys Gln Cys Glu Arg Lys Cys Asn Glu Asp Asp Tyr Glu Lys		
	125 130 135	
GGA GAT GAG GCA TGC CGC TCA CAT GTT TGT GAA CGT CCT GGT GCC TGT	482	
Gly Asp Glu Ala Cys Arg Ser His Val Cys Glu Arg Pro Gly Ala Cys		
	140 145 150	
GTA TGC GAA GAC GGG TTC TAC AGA AAC AAA AAA GGT AGC TGT GTG GAA	530	
Val Cys Glu Asp Gly Phe Tyr Arg Asn Lys Lys Gly Ser Cys Val Glu		
	155 160 165 170	
AGC GAT GAC TGC GAA TAC GAT AAT ATG GAT TTC ATC ACT TTT GCA CCA	578	
Ser Asp Asp Cys Glu Tyr Asp Asn Met Asp Phe Ile Thr Phe Ala Pro		
	175 180 185	
GAA ACC TCA CGA TAACCAAAGA TGCTACCTCT CGTACGCAAC TCCGCTGATT GAGGTT	636	
Glu Thr Ser Arg		
	190	
GATTCACTCC CTTGCATCTC AACATTTTTT TTGTGATGCT GTGCATCTGA GCTTAACCTG	696	
ATAAAGCCTA TGGTG	711	

(2) INFORMATION FOR SEQ ID NO:10:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 425 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 10...291

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GAATTCGCGC	ATG	CGG	ACG	CTC	TAC	CTC	ATT	TCT	ATC	TGG	TTG	TTC	CTC	ATC	51
	Met	Arg	Thr	Leu	Tyr	Leu	Ile	Ser	Ile	Trp	Leu	Phe	Leu	Ile	
	1				5					10					
TCG CAA TGT AAT GGA AAA GCA TTC CCG AAA TGT GAC GTC AAT GAA AGA															99
Ser Gln Cys Asn Gly Lys Ala Phe Pro Lys Cys Asp Val Asn Glu Arg															
15					20				25					30	
TTC GAG GTG TGT GGC AAT CTG AAG GAG TGC GAG CTC AAG TGC GAT GAG															147
Phe Glu Val Cys Gly Asn Leu Lys Glu Cys Glu Leu Lys Cys Asp Glu															
				35				40					45		
GAC CCT AAG ATA TGC TCT CGT GCA TGT ATT CGT CCC CCT GCT TGC GTA															195
Asp Pro Lys Ile Cys Ser Arg Ala Cys Ile Arg Pro Pro Ala Cys Val															
			50				55					60			
TGC GAT GAC GGA TTC TAC AGA GAC AAA TAT GGC TTC TGT GTT GAA GAA															243
Cys Asp Asp Gly Phe Tyr Arg Asp Lys Tyr Gly Phe Cys Val Glu Glu															
			65				70					75			
GAC GAA TGT AAC GAT ATG GAG ATT ATT ACT TTT CCA CCA GAA ACC AAA TG															293
Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys															
			80				85					90			
ATGACCGAAG CTTCCACCTT TCTATACATA TCTTCACTGC TTGACAGGCT TCTCGACAAT															353
TTAGAAGTTC TGCTTGACTT TGTCTATTTG AAATTGTTCA CACTAATGGG GGAAGTAAAG															413
CATTTTTCACG AC															425

## (2) INFORMATION FOR SEQ ID NO:11:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 471 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
(B) LOCATION: 23...310

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GAATTCGCT ACATTTTCAA CA ATG TCG ACG CTT TAT GTT ATC GCA ATA TGT	52
Met Ser Thr Leu Tyr Val Ile Ala Ile Cys	
1 5 10	
TTG CTG CTT GTT TCG CAA TGC AAT GGA AGA ACG GTG AAG AAG TGT GGC	100
Leu Leu Leu Val Ser Gln Cys Asn Gly Arg Thr Val Lys Lys Cys Gly	
15 20 25	
AAG AAT GAA AGA TAC GAC GAC TGT GGC AAT GCA AAG GAC TGC GAG ACC	148
Lys Asn Glu Arg Tyr Asp Asp Cys Gly Asn Ala Lys Asp Cys Glu Thr	
30 35 40	
AAG TGC GGT GAA GAG GAA AAG GTG TGC CGT TCG CGT GAG TGT ACT AGT	196
Lys Cys Gly Glu Glu Glu Lys Val Cys Arg Ser Arg Glu Cys Thr Ser	
45 50 55	
CCT GGT GCC TGC GTA TGC GAA CAA GGA TTC TAC AGA GAT CCG GCT GGC	244
Pro Gly Ala Cys Val Cys Glu Gln Gly Phe Tyr Arg Asp Pro Ala Gly	
60 65 70	
GAC TGT GTC ACT GAT GAA GAA TGT GAT GAA TGG AAC AAT ATG GAG ATC	292
Asp Cys Val Thr Asp Glu Glu Cys Asp Glu Trp Asn Asn Met Glu Ile	
75 80 85 90	
ATT ACT ATG CCA AAA CAG TAGTGCGAAG TTCCCTTCTT TCTCCAAATC TGCTCCGTG	349
Ile Thr Met Pro Lys Gln	
95	
CTCAATTATC ACACACCTCC ACTAGTTAAG ATTGACTGAC TCTCTTGCAT TGTAGTATTT	409
TCGCTTGACT CTGTGCATTT AAGCATGAGA TACTACTAGG GAGAATAAAA ATTACTAACT	469
AC	471

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 396 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
(B) LOCATION: 10...237

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GAATTCGG AAA TGT CCT ACC GAT GAA TGG TTC GAT TGG TGT GGA ACT TAC	51
Lys Cys Pro Thr Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr	
1 5 10	
AAG CAT TGC GAA CTC AAG TGC GAT AGG GAG CTA ACT GAG AAA GAA GAG	99

Lys	His	Cys	Glu	Leu	Lys	Cys	Asp	Arg	Glu	Leu	Thr	Glu	Lys	Glu	Glu		
15					20					25					30		
CAG	GCA	TGT	CTC	TCA	CGT	GTT	TGT	GAG	AAG	TCC	GCT	TGC	GTA	TGC	AAT	147	
Gln	Ala	Cys	Leu	Ser	Arg	Val	Cys	Glu	Lys	Ser	Ala	Cys	Val	Cys	Asn		
			35					40					45				
GAC	GGA	TTA	TAC	AGA	GAC	AAG	TTT	GGC	AAC	TGT	GTT	GAA	AAA	GAC	GAA	195	
Asp	Gly	Leu	Tyr	Arg	Asp	Lys	Phe	Gly	Asn	Cys	Val	Glu	Lys	Asp	Glu		
			50					55					60				
TGC	AAC	GAT	ATG	GAG	ATT	ATT	ACT	TTT	GCA	CCA	GAA	ACC	AAA	TAATGGCCTA	247		
Cys	Asn	Asp	Met	Glu	Ile	Ile	Thr	Phe	Ala	Pro	Glu	Thr	Lys				
			65				70					75					
AGGTTCCAAA	CCTTGCTACA	CACCGTCAGT	GCTTTACTGT	TTCCTCTACG	TGTTAGTAGT	307											
TTTGCTTGAC	TCTGTGTATT	TAAGCATTGT	CTACTAATGG	GCAAAGTAAA	GCATTGTAAG	367											
GACATAATAA	TGAGTAAACC	TTCTGATTT				396											

## (2) INFORMATION FOR SEQ ID NO:13:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 688 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (ix) FEATURE:

- (A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 21...560

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Ancylostoma duodenale

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

GAATTCCGGG	CGGCAGAAAG	ATG	CGA	ATG	CTC	TAC	CTT	GTT	CCT	ATC	TGG	50					
		Met	Arg	Met	Leu	Tyr	Leu	Val	Pro	Ile	Trp						
		1				5					10						
TTG	CTG	CTC	ATT	TCG	CTA	TGC	AGT	GGA	AAA	GCT	GCG	AAG	AAA	TGT	GGT	98	
Leu	Leu	Leu	Ile	Ser	Leu	Cys	Ser	Gly	Lys	Ala	Ala	Lys	Lys	Cys	Gly		
			15					20						25			
CTC	AAT	GAA	AGG	CTG	GAC	TGT	GGC	AAT	CTG	AAG	CAA	TGC	GAG	CCC	AAG	146	
Leu	Asn	Glu	Arg	Leu	Asp	Cys	Gly	Asn	Leu	Lys	Gln	Cys	Glu	Pro	Lys		
			30				35						40				
TGC	AGC	GAC	TTG	GAA	AGT	GAG	GAG	TAT	GAG	GAG	GAA	GAT	GAG	TCG	AAA	194	
Cys	Ser	Asp	Leu	Glu	Ser	Glu	Glu	Tyr	Glu	Glu	Glu	Asp	Glu	Ser	Lys		
		45				50						55					
TGT	CGA	TCA	CGT	GAA	TGT	TCT	CGT	CGT	GTT	TGT	GTA	TGC	GAT	GAA	GGA	242	
Cys	Arg	Ser	Arg	Glu	Cys	Ser	Arg	Arg	Val	Cys	Val	Cys	Asp	Glu	Gly		
		60				65					70						

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 349 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(A) ORGANISM: *Heligmosomoides polygyrus*

(A) NAME/KEY: Coding Sequence  
(B) LOCATION: 49...276

GAATTCGCG CACCTGAGAG GTGAGCTACG CAAGTCTTCG CTGGTACA ATG ATC CGA 57  
Met Ile Arg  
1

AAG CTC GTT CTG CTG ACT GCT ATC GTC ACG GTG GTG CTA AGT GCG AAG 105  
Lys Leu Val Leu Leu Thr Ala Ile Val Thr Val Val Leu Ser Ala Lys  
5 10 15

```

ACC TGT GGA CCA AAC GAG GAG TAC ACT GAA TGC GGG ACG CCA TGC GAG      153
Thr Cys Gly Pro Asn Glu Glu Tyr Thr Glu Cys Gly Thr Pro Cys Glu
20                      25                      30                      35

CCG AAG TGC AAT GAA CCG ATG CCA GAC ATC TGT ACT CTG AAC TGC ATC      201
Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu Asn Cys Ile
                      40                      45                      50

GTG AAC GTG TGT CAG TGC AAA CCC GGC TTC AAG CGC GGA CCG AAA GGA      249
Val Asn Val Cys Gln Cys Lys Pro Gly Phe Lys Arg Gly Pro Lys Gly
                      55                      60                      65

TGC GTC GCC CCC GGA CCA GGC TGT AAA TAGTTCTCCA CCTGCCCTTT CGTTGGAA    304
Cys Val Ala Pro Gly Pro Gly Cys Lys
                      70                      75

CAAATGGCTG TCTTTTTTACA TTCTGAATCA ATAAAGCCGA ACGGT                    349

```

## (2) INFORMATION FOR SEQ ID NO:15:

## (i) SEQUENCE CHARACTERISTICS:

```

(A) LENGTH:          432 base pairs
(B) TYPE:             nucleic acid
(C) STRANDEDNESS:    single
(D) TOPOLOGY:        linear

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## (ix) FEATURE:

```

(A) NAME/KEY: Coding Sequence
(B) LOCATION: 40...393

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## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

```

AAGCTTTGCT AACATACTGC GTAATAAGGA GTCTTAATC ATG CCA GTT CTT TTG      54
                      Met Pro Val Leu Leu
                      1                      5

GGT ATT CCG TTA TTA TTG CGT TTC CTC GGT TTC CTT CTG GTA ACT TTG      102
Gly Ile Pro Leu Leu Leu Arg Phe Leu Gly Phe Leu Leu Val Thr Leu
                      10                      15                      20

TTC GGC TAT CTG CTT ACT TTC CTT AAA AAG GGC TTC GGT AAG ATA GCT      150
Phe Gly Tyr Leu Leu Thr Phe Leu Lys Lys Gly Phe Gly Lys Ile Ala
                      25                      30                      35

ATT GCT ATT TCA TTG TTT CTT GCT CTT ATT ATT GGG CTT AAC TCA ATT      198
Ile Ala Ile Ser Leu Phe Leu Ala Leu Ile Ile Gly Leu Asn Ser Ile
                      40                      45                      50

CTT GTG GGT TAT CTC TCT GAT ATT AGC GCA CAA TTA CCC TCT GAT TTT      246
Leu Val Gly Tyr Leu Ser Asp Ile Ser Ala Gln Leu Pro Ser Asp Phe
                      55                      60                      65

GTT CAG GGC GTT CAG TTA ATT CTC CCG TCT AAT GCG CTT CCC TGT TTT      294
Val Gln Gly Val Gln Leu Ile Leu Pro Ser Asn Ala Leu Pro Cys Phe
                      70                      75                      80                      85

TAT GTT ATT CTC TCT GTA AAG GCT GCT ATT TTC ATT TTT GAC GTT AAA      342
Tyr Val Ile Leu Ser Val Lys Ala Ala Ile Phe Ile Phe Asp Val Lys
                      90                      95                      100

```



CAA AAA ATC GTT TCT TAT TTG GAT TGG GAT AAA GGT GGA GGC TCA GGC 390  
 Gln Lys Ile Val Ser Tyr Leu Asp Trp Asp Lys Gly Gly Gly Ser Gly  
           105                          110                          115

GGA GGCCAAGTCG GCCATCCCAT ATCACGCGGC CGCGGATCC 432  
 Gly

## (2) INFORMATION FOR SEQ ID NO:16:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 433 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 40...393

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

AAGCTTTGCT AACATACTGC GTAATAAGGA GTCTTAATC ATG CCA GTT CTT TTG 54  
   Met Pro Val Leu Leu  
   1  5

GGT ATT CCG TTA TTA TTG CGT TTC CTC GGT TTC CTT CTG GTA ACT TTG 102  
 Gly Ile Pro Leu Leu Leu Arg Phe Leu Gly Phe Leu Leu Val Thr Leu  
   10  15  20

TTC GGC TAT CTG CTT ACT TTC CTT AAA AAG GGC TTC GGT AAG ATA GCT 150  
 Phe Gly Tyr Leu Leu Thr Phe Leu Lys Lys Gly Phe Gly Lys Ile Ala  
   25  30  35

ATT GCT ATT TCA TTG TTT CTT GCT CTT ATT ATT GGG CTT AAC TCA ATT 198  
 Ile Ala Ile Ser Leu Phe Leu Ala Leu Ile Ile Gly Leu Asn Ser Ile  
   40  45  50

CTT GTG GGT TAT CTC TCT GAT ATT AGC GCA CAA TTA CCC TCT GAT TTT 246  
 Leu Val Gly Tyr Leu Ser Asp Ile Ser Ala Gln Leu Pro Ser Asp Phe  
   55  60  65

GTT CAG GGC GTT CAG TTA ATT CTC CCG TCT AAT GCG CTT CCC TGT TTT 294  
 Val Gln Gly Val Gln Leu Ile Leu Pro Ser Asn Ala Leu Pro Cys Phe  
   70  75  80  85

TAT GTT ATT CTC TCT GTA AAG GCT GCT ATT TTC ATT TTT GAC GTT AAA 342  
 Tyr Val Ile Leu Ser Val Lys Ala Ala Ile Phe Ile Phe Asp Val Lys  
   90  95  100

CAA AAA ATC GTT TCT TAT TTG GAT TGG GAT AAA GGT GGA GGC TCA GGC 390  
 Gln Lys Ile Val Ser Tyr Leu Asp Trp Asp Lys Gly Gly Gly Ser Gly  
   105  110  115

GGA GGGCCAAGTC GGCCATCCCA TATCACGCGG CCGCGGATCC 433  
 Gly

## (2) INFORMATION FOR SEQ ID NO:17:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 434 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 40...393

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

AAGCTTTGCT AACATACTGC GTAATAAGGA GTCTTAATC	ATG CCA GTT CTT TTG	54
	Met Pro Val Leu Leu	
	1 5	
GGT ATT CCG TTA TTA TTG CGT TTC CTC GGT TTC CTT CTG GTA ACT TTG		102
Gly Ile Pro Leu Leu Arg Phe Leu Gly Phe Leu Leu Val Thr Leu		
	10 15 20	
TTC GGC TAT CTG CTT ACT TTC CTT AAA AAG GGC TTC GGT AAG ATA GCT		150
Phe Gly Tyr Leu Leu Thr Phe Leu Lys Lys Gly Phe Gly Lys Ile Ala		
	25 30 35	
ATT GCT ATT TCA TTG TTT CTT GCT CTT ATT ATT GGG CTT AAC TCA ATT		198
Ile Ala Ile Ser Leu Phe Leu Ala Leu Ile Ile Gly Leu Asn Ser Ile		
	40 45 50	
CTT GTG GGT TAT CTC TCT GAT ATT AGC GCA CAA TTA CCC TCT GAT TTT		246
Leu Val Gly Tyr Leu Ser Asp Ile Ser Ala Gln Leu Pro Ser Asp Phe		
	55 60 65	
GTT CAG GGC GTT CAG TTA ATT CTC CCG TCT AAT GCG CTT CCC TGT TTT		294
Val Gln Gly Val Gln Leu Ile Leu Pro Ser Asn Ala Leu Pro Cys Phe		
	70 75 80 85	
TAT GTT ATT CTC TCT GTA AAG GCT GCT ATT TTC ATT TTT GAC GTT AAA		342
Tyr Val Ile Leu Ser Val Lys Ala Ala Ile Phe Ile Phe Asp Val Lys		
	90 95 100	
CAA AAA ATC GTT TCT TAT TTG GAT TGG GAT AAA GGT GGA GGC TCA GGC		390
Gln Lys Ile Val Ser Tyr Leu Asp Trp Asp Lys Gly Gly Gly Ser Gly		
	105 110 115	
GGA TCGGCCAAGT CGGCCATCCC ATATCACGCG GCCGCGGATC C		434
Gly		

## (2) INFORMATION FOR SEQ ID NO:18:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Gly Gly Gly Ser Gly Gly  
 1 5

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 430 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 10...282

(D) OTHER INFORMATION: "W" stands for A or T

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

GAATTCGG	CTG	GTW	TCC	TAC	TGC	AGT	GGA	AAA	GCA	ACG	ATG	CAG	TGT	GGT	51	
	Leu	Val	Ser	Tyr	Cys	Ser	Gly	Lys	Ala	Thr	Met	Gln	Cys	Gly		
1					5					10						
GAG	AAT	GAA	AAG	TAC	GAT	TCG	TGC	GGT	AGC	AAG	GAG	TGC	GAT	AAG	AAG	99
Glu	Asn	Glu	Lys	Tyr	Asp	Ser	Cys	Gly	Ser	Lys	Glu	Cys	Asp	Lys	Lys	
15				20				25				30				
TGC	AAA	TAT	GAC	GGA	GTT	GAG	GAG	GAA	GAC	GAC	GAG	GAA	CCT	AAT	GTG	147
Cys	Lys	Tyr	Asp	Gly	Val	Glu	Glu	Glu	Asp	Asp	Glu	Glu	Pro	Asn	Val	
			35				40						45			
CCA	TGC	CTA	GTA	CGT	GTG	TGT	CAT	CAA	GAT	TGC	GTA	TGC	GAA	GAA	GGA	195
Pro	Cys	Leu	Val	Arg	Val	Cys	His	Gln	Asp	Cys	Val	Cys	Glu	Glu	Gly	
			50				55					60				
TTC	TAT	AGA	AAC	AAA	GAT	GAC	AAA	TGT	GTA	TCA	GCA	GAA	GAC	TGC	GAA	243
Phe	Tyr	Arg	Asn	Lys	Asp	Asp	Lys	Cys	Val	Ser	Ala	Glu	Asp	Cys	Glu	
	65						70				75					
CTT	GAC	AAT	ATG	GAC	TTT	ATA	TAT	CCC	GGA	ACT	CGA	AAC	TGA	ACGAAGG	CTC	295
Leu	Asp	Asn	Met	Asp	Phe	Ile	Tyr	Pro	Gly	Thr		Arg	Asn			
	80					85					90					
CATTCTTGCT	GCACAAGATC	GATTGTCTCT	CCCCTGCATC	TCAGTAGTTT	TGCTACATTG											355
TATATGGTAG	CAAAAAATTA	GCTTAGGGAG	AATAAAATCT	TTACCTATAT	TTAATCAATG											415
AAGTATTCTC	TTTCT															430

## (2) INFORMATION FOR SEQ ID NO:20:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 100 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

```

Met Lys Met Leu Tyr Ala Ile Ala Ile Met Phe Leu Leu Val Ser Leu
 1           5           10           15
Cys Ser Ala Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn
 20           25           30
Glu Trp Leu Asp Asp Cys Gly Thr Gln Lys Pro Cys Glu Ala Lys Cys
 35           40           45
Asn Glu Glu Pro Pro Glu Glu Glu Asp Pro Ile Cys Arg Ser Arg Gly
 50           55           60
Cys Leu Leu Pro Pro Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg Asp
 65           70           75           80
Thr Val Ile Gly Asp Cys Val Arg Glu Glu Glu Cys Asp Gln His Glu
 85           90           95
Ile Ile His Val
          100

```

## (2) INFORMATION FOR SEQ ID NO:21:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 98 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

```

Met Lys Met Leu Tyr Ala Ile Ala Ile Met Phe Leu Leu Val Ser Leu
 1           5           10           15
Cys Ser Thr Arg Thr Val Arg Lys Ala Tyr Pro Glu Cys Gly Glu Asn
 20           25           30
Glu Trp Leu Asp Val Cys Gly Thr Lys Lys Pro Cys Glu Ala Lys Cys
 35           40           45

```

Ser Glu Glu Glu Glu Glu Asp Pro Ile Cys Arg Ser Phe Ser Cys Pro  
 50 55 60  
 Gly Pro Ala Ala Cys Val Cys Glu Asp Gly Phe Tyr Arg Asp Thr Val  
 65 70 75 80  
 Ile Gly Asp Cys Val Lys Glu Glu Glu Cys Asp Gln His Glu Ile Ile  
 85 90 95  
 His Val

## (2) INFORMATION FOR SEQ ID NO:22:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 94 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Met Arg Thr Leu Tyr Leu Ile Ser Ile Trp Leu Phe Leu Ile Ser Gln  
 1 5 10 15  
 Cys Asn Gly Lys Ala Phe Pro Lys Cys Asp Val Asn Glu Arg Phe Glu  
 20 25 30  
 Val Cys Gly Asn Leu Lys Glu Cys Glu Leu Lys Cys Asp Glu Asp Pro  
 35 40 45  
 Lys Ile Cys Ser Arg Ala Cys Ile Arg Pro Pro Ala Cys Val Cys Asp  
 50 55 60  
 Asp Gly Phe Tyr Arg Asp Lys Tyr Gly Phe Cys Val Glu Glu Asp Glu  
 65 70 75 80  
 Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys  
 85 90

## (2) INFORMATION FOR SEQ ID NO:23:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 96 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Met Ser Thr Leu Tyr Val Ile Ala Ile Cys Leu Leu Leu Val Ser Gln  
 1 5 10 15  
 Cys Asn Gly Arg Thr Val Lys Lys Cys Gly Lys Asn Glu Arg Tyr Asp  
 20 25 30  
 Asp Cys Gly Asn Ala Lys Asp Cys Glu Thr Lys Cys Gly Glu Glu Glu  
 35 40 45  
 Lys Val Cys Arg Ser Arg Glu Cys Thr Ser Pro Gly Ala Cys Val Cys  
 50 55 60  
 Glu Gln Gly Phe Tyr Arg Asp Pro Ala Gly Asp Cys Val Thr Asp Glu  
 65 70 75 80  
 Glu Cys Asp Glu Trp Asn Asn Met Glu Ile Ile Thr Met Pro Lys Gln  
 85 90 95

## (2) INFORMATION FOR SEQ ID NO:24:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 108 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Met Ala Val Leu Tyr Ser Val Ala Ile Ala Leu Leu Leu Val Ser Gln  
 1 5 10 15  
 Cys Ser Gly Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn  
 20 25 30  
 Glu Tyr Phe Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys  
 35 40 45  
 Asn Glu Glu Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys  
 50 55 60  
 Leu Ile Arg Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly  
 65 70 75 80  
 Phe Tyr Arg Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu  
 85 90 95  
 Tyr Glu Asn Met Glu Phe Ile Thr Phe Ala Pro Glu  
 100 105

## (2) INFORMATION FOR SEQ ID NO:25:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 82 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Val Pro Ile Cys Gly Ser Asn Glu Arg Tyr Ser Asp Cys Gly Asn Asp  
 1 5 10 15  
 Lys Gln Cys Glu Arg Lys Cys Asn Glu Asp Asp Tyr Glu Lys Gly Asp  
 20 25 30  
 Glu Ala Cys Arg Ser His Val Cys Glu Arg Pro Gly Ala Cys Val Cys  
 35 40 45  
 Glu Asp Gly Phe Tyr Arg Asn Lys Lys Gly Ser Cys Val Glu Ser Asp  
 50 55 60  
 Asp Cys Glu Tyr Asp Asn Met Asp Phe Ile Thr Phe Ala Pro Glu Thr  
 65 70 75 80  
 Ser Arg

## (2) INFORMATION FOR SEQ ID NO:26:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Lys Cys Pro Thr Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys His  
 1 5 10 15  
 Cys Glu Leu Lys Cys Asp Arg Glu Leu Thr Glu Glu Glu Gln Ala Cys  
 20 25 30  
 Leu Ser Arg Val Cys Glu Lys Ser Ala Cys Val Cys Asn Asp Gly Leu  
 35 40 45  
 Tyr Arg Asp Lys Phe Gly Asn Cys Val Glu Lys Asp Glu Cys Asn Asp  
 50 55 60  
 Met Glu Ile Ile Thr Phe Ala Pro Glu Thr Lys

65

70

75

## (2) INFORMATION FOR SEQ ID NO:27:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 102 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

```

Met Arg Met Leu Tyr Leu Val Pro Ile Trp Leu Leu Leu Ile Ser Leu
 1           5           10
Cys Ser Gly Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp
          20           25           30
Cys Gly Asn Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser
          35           40           45
Glu Glu Tyr Glu Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys
          50           55           60
Ser Arg Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys
65           70           75           80
Gly Lys Cys Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile
          85           90           95
Ile Thr Phe Pro Pro Glu
          100

```

## (2) INFORMATION FOR SEQ ID NO:28:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

```

Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly Asn Tyr Lys
 1           5           10           15

```



Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys Asn Glu Glu  
                   20                  25                  30  
 Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Lys Asp  
                   35                  40                  45  
 Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His Asp Glu Cys  
                   50                  55                  60  
 Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His  
                   65                  70                  75

## (2) INFORMATION FOR SEQ ID NO:29:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 76 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Heligmosomoides polygyrus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Met Ile Arg Lys Leu Val Leu Leu Thr Ala Ile Val Thr Val Val Leu  
   1                  5                  10                  15  
 Ser Ala Lys Thr Cys Gly Pro Asn Glu Glu Tyr Thr Glu Cys Gly Thr  
                   20                  25                  30  
 Pro Cys Glu Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu  
                   35                  40                  45  
 Asn Cys Ile Val Asn Val Cys Gln Cys Lys Pro Gly Phe Lys Arg Gly  
                   50                  55                  60  
 Pro Lys Gly Cys Val Ala Pro Gly Pro Gly Cys Lys  
                   65                  70                  75

## (2) INFORMATION FOR SEQ ID NO:30:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 187 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

TTATTCGAAA CGATGTTCTC TCCAATTTTG TCCTTGGAAG TTATTTTAGC TACTTTGCAA 60  
 TCTGTCTTCG CCCAGCCAGT TATCTCCACT ACCGTTGGTT CCGCTGCCGA GGGTTCCTTG 120

GACAAGAGGC CTATCCGCGG AATTCAGATC TGAATGCGGC CGCTCGAGAC TAGTGGATCC 180  
TTAGACA 187

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 495 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
(B) LOCATION: 36...356

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

GAATTC																CGC	GAATTC		CGCT	TGCTACTACT		CAACG		ATG	AAG	ACG	CTC	TAT	ATT	53
																							Met	Lys	Thr	Leu	Tyr	Ile		
																							1				5			
GTC	GCT	ATA	TGC	TCG	CTC	CTC	ATT	TCG	CTG	TGT	ACT	GGA	AAA	CCT	TCG	101														
Val	Ala	Ile	Cys	Ser	Leu	Leu	Ile	Ser	Leu	Cys	Thr	Gly	Lys	Pro	Ser															
			10				15				20																			
GAG	AAA	GAA	TGT	GGT	CCC	CAT	GAA	AGA	CTC	GAC	TGT	GGC	AAC	AAG	AAG	149														
Glu	Lys	Glu	Cys	Gly	Pro	His	Glu	Arg	Leu	Asp	Cys	Gly	Asn	Lys	Lys															
		25				30				35																				
CCA	TGC	GAG	CGC	AAG	TGC	AAA	ATA	GAG	ACA	AGT	GAG	GAG	GAG	GAT	GAC	197														
Pro	Cys	Glu	Arg	Lys	Cys	Lys	Ile	Glu	Thr	Ser	Glu	Glu	Glu	Asp	Asp															
		40				45				50																				
TAC	GAA	GAG	GGA	ACC	GAA	CGT	TTT	CGA	TGC	CTC	TTA	CGT	GTG	TGT	GAT	245														
Tyr	Glu	Glu	Gly	Thr	Glu	Arg	Phe	Arg	Cys	Leu	Leu	Arg	Val	Cys	Asp															
55				60				65				70																		
CAG	CCT	TAT	GAA	TGC	ATA	TGC	GAT	GAT	GGA	TAC	TAC	AGA	AAC	AAG	AAA	293														
Gln	Pro	Tyr	Glu	Cys	Ile	Cys	Asp	Asp	Gly	Tyr	Tyr	Arg	Asn	Lys	Lys															
			75				80				85																			
GGC	GAA	TGT	GTG	ACT	GAT	GAT	GTA	TGC	CAG	GAA	GAC	TTT	ATG	GAG	TTT	341														
Gly	Glu	Cys	Val	Thr	Asp	Asp	Val	Cys	Gln	Glu	Asp	Phe	Met	Glu	Phe															
			90				95				100																			
ATT	ACT	TTC	GCA	CCA	TAAACCCAAT		AATGACCAAT		GACTCCCATT		CTTCGTGATC		AG			398														
Ile	Thr	105		Ala	Pro																									
CGTCGGTGGT			TGACAGTCTC			CCCTACATCT			TAGTAGTTTT			GCTTGATAAT			GTATACATAA		458													
ACTGTACTTT			CTGAGATAGA			ATAAAGCTCT			CAACTAC																					
																495														

## (2) INFORMATION FOR SEQ ID NO:32:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 478 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 24...341

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

```

GAATTCGCG GAATTCGCA ACG ATG AAG ACG CTC TAT ATT ATC GCT ATA TGC      53
                Met Lys Thr Leu Tyr Ile Ile Ala Ile Cys
                  1                      5                      10

TCG CTC CTC ATT TCG TTG TGT ACT GGA AGA CCG GAA AAA AAG TGC GGT      101
Ser Leu Leu Ile Ser Leu Cys Thr Gly Arg Pro Glu Lys Lys Cys Gly
                  15                      20                      25

CCC GGT GAA AGA CTC GCC TGT GGC AAT AAG AAG CCA TGC GAG CGC AAG      149
Pro Gly Glu Arg Leu Ala Cys Gly Asn Lys Lys Pro Cys Glu Arg Lys
                  30                      35                      40

TGC AAA ATA GAG ACA AGT GAG GAG GAG GAT GAC TAC CCA GAG GGA ACC      197
Cys Lys Ile Glu Thr Ser Glu Glu Glu Asp Asp Tyr Pro Glu Gly Thr
                  45                      50                      55

GAA CGT TTT CGA TGC CTC TTA CGT GTG TGT GAT CAG CCT TAT GAA TGC      245
Glu Arg Phe Arg Cys Leu Leu Arg Val Cys Asp Gln Pro Tyr Glu Cys
                  60                      65                      70

ATA TGC GAT GAT GGA TAC TAC AGA AAC AAG AAA GGC GAA TGT GTG ACT      293
Ile Cys Asp Asp Gly Tyr Tyr Arg Asn Lys Lys Gly Glu Cys Val Thr
                  75                      80                      85

GAT GAT GTA TGC CAG GAA GAC TTT ATG GAG TTT ATT ACT TTC GCA CCA      341
Asp Asp Val Cys Gln Glu Asp Phe Met Glu Phe Ile Thr Phe Ala Pro
                  95                      100                      105

TAAACCCAAT AATGACCACT GGCTCCCATT CTCGTGACC AGCGTCGGTG GTTGACAGTC      401

TCCCCTGCAT CTTAGTAGTT TTGCTTGATA ATGTATCCAT AAACAGTACT TTCTGAGATA      461

GAATAAAGCT CTCAACT                                          478

```

## (2) INFORMATION FOR SEQ ID NO:33:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 472 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence

(B) LOCATION: 21...335

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

GAATTCGTA CTACTCAACG	ATG AAG ACG CTC TAT ATT ATC GCT ATA TGC	50
	Met Lys Thr Leu Tyr Ile Ile Ala Ile Cys	
	1 5 10	
TCG CTG CTC TTT TCA CTG TGT ACT GGA AGA CCG GAA AAA AAG TGC GGT		98
Ser Leu Leu Phe Ser Leu Cys Thr Gly Arg Pro Glu Lys Lys Cys Gly		
	15 20 25	
CCC GGT GAA AGA CTC GAC TGT GCC AAC AAG AAG CCA TGC GAG CCC AAG		146
Pro Gly Glu Arg Leu Asp Cys Ala Asn Lys Lys Pro Cys Glu Pro Lys		
	30 35 40	
TGC AAA ATA GAG ACA AGT GAG GAG GAG GAT GAC GAC GTA GAG GAT ACC		194
Cys Lys Ile Glu Thr Ser Glu Glu Glu Asp Asp Asp Val Glu Asp Thr		
	45 50 55	
GAT GTG AGA TGC CTC GTA CGT GTG TGT GAA CGT CCT CTT AAA TGC ATA		242
Asp Val Arg Cys Leu Val Arg Val Cys Glu Arg Pro Leu Lys Cys Ile		
	60 65 70	
TGC AAG GAT GGA TAC TAC AGA AAC AAG AAA GGC GAA TGT GTG ACT GAT		290
Cys Lys Asp Gly Tyr Tyr Arg Asn Lys Lys Gly Glu Cys Val Thr Asp		
	75 80 85 90	
GAT GTA TGC CAG GAA GAC TTT ATG GAG TTT ATT ACT TTC GCA CCA TAAACC		341
Asp Val Cys Gln Glu Asp Phe Met Glu Phe Ile Thr Phe Ala Pro		
	95 100 105	
CAATAATGAC CACTGGCTCC CATTCTTCGT GATCAGCGTC GGTGGTTGAC AGTCTCCCCCT		401
GCATCTTAGT TGCTTTGCTT GATAATCTAT ACATAAACAG TACTTTCTGA GATAGAATAA		461
AGCTCTCAAC T		472

## (2) INFORMATION FOR SEQ ID NO:34:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 487 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence

(B) LOCATION: 57...347

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

GAATTCGGA CTTACTAGTA CTCAGCGAAT CAAATACGAC TTACTACTAC TCAACG ATG	59
Met	
1	
AAG ACG CTC TCT GCT ATC CCT ATA ATG CTG CTC CTG GTA TCG CAA TGC	107
Lys Thr Leu Ser Ala Ile Pro Ile Met Leu Leu Leu Val Ser Gln Cys	
5 10 15	
AGT GGA AAA TCA CTG TGG GAT CAG AAG TGT GGT GAG AAT GAA AGG CTC	155
Ser Gly Lys Ser Leu Trp Asp Gln Lys Cys Gly Glu Asn Glu Arg Leu	
20 25 30	
GAC TGT GGC AAT CAG AAG GAC TGT GAG CGC AAG TGC GAT GAT AAA AGA	203
Asp Cys Gly Asn Gln Lys Asp Cys Glu Arg Lys Cys Asp Asp Lys Arg	
35 40 45	
AGT GAA GAA GAA ATT ATG CAG GCA TGT CTC ACA CGT CAA TGT CTT CCT	251
Ser Glu Glu Glu Ile Met Gln Ala Cys Leu Thr Arg Gln Cys Leu Pro	
50 55 60 65	
CCT GTT TGC GTA TGT GAA GAT GGA TTC TAC AGA AAT GAC AAC GAC CAA	299
Pro Val Cys Val Cys Glu Asp Gly Phe Tyr Arg Asn Asp Asn Asp Gln	
70 75 80	
TGT GTT GAT GAA GAA GAA TGC AAT ATG GAG TTT ATT ACT TTC GCA CCA TG	349
Cys Val Asp Glu Glu Glu Cys Asn Met Glu Phe Ile Thr Phe Ala Pro	
85 90 95	
AAGCAAATGA CAGCCGATGG TTTGGACTCT CGCTACAGAT CACAGCTTTA CTGTTTCCCT	409
TGCATCATAG TAGTTTTGCT AGATAGTGTA TATATTAGCA TGATTTTCTG ATAGGGAGAA	469
TAAAGCTTTC CAATTTTC	487

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH:	477 base pairs
(B) TYPE:	nucleic acid
(C) STRANDEDNESS:	single
(D) TOPOLOGY:	linear

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(ix) FEATURE:

(A) NAME/KEY:	Coding Sequence
(B) LOCATION:	24...338

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

GAATTCGCG GAATTCGCA ACG ATG AAG ACG CTC TAT ATT ATC GCT ATA TGC	53
Met Lys Thr Leu Tyr Ile Ile Ala Ile Cys	
1 5 10	

TCG CTC CTC ATT TCG CTG TGT ACT GGA AGA CCG GAA AAA AAG TGC GGT	101
Ser Leu Leu Ile Ser Leu Cys Thr Gly Arg Pro Glu Lys Lys Cys Gly	
15 20 25	
CCC GGT GAA AGA CTC GAC TGT GCC AAC AAG AAG CCA TGC GAG CCC AAG	149
Pro Gly Glu Arg Leu Asp Cys Ala Asn Lys Lys Pro Cys Glu Pro Lys	
30 35 40	
TGC AAA ATA GAG ACA AGT GAG GAG GAG GAT GAC GAC GTA GAG GAA ACC	197
Cys Lys Ile Glu Thr Ser Glu Glu Glu Asp Asp Asp Val Glu Glu Thr	
45 50 55	
GAT GTG AGA TGC CTC GTA CGT GTG TGT GAA CGG CCT CTT AAA TGC ATA	245
Asp Val Arg Cys Leu Val Arg Val Cys Glu Arg Pro Leu Lys Cys Ile	
60 65 70	
TGC AAG GAT GGA TAC TAC AGA AAC AAG AAA GGC GAA TGT GTG ACT GAT	293
Cys Lys Asp Gly Tyr Tyr Arg Asn Lys Lys Gly Glu Cys Val Thr Asp	
75 80 85 90	
GAT GTA TGC CAG GAA GAC TTT ATG GAG TTT ATT ACT TTC GCA CCA TAAACC	344
Asp Val Cys Gln Glu Asp Phe Met Glu Phe Ile Thr Phe Ala Pro	
95 100 105	
CAATAATGAC CACTGGCTCC CATTCTTCGT GATCAGCGTC GGTGGTTGAC AGTCTCCCCT	404
GCATCTTAGT TGCTTTGCTT GATAATCTAT ACATAAACAG TACTTTCTGA GATAGAATAA	464
AGCTCTCAAC TAC	477

## (2) INFORMATION FOR SEQ ID NO:36:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 686 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

- (A) NAME/KEY: Coding Sequence
- (B) LOCATION: 14...556

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GAATTCCGGA AAA ATG CTG ATG CTC TAC CTT GTT CCT ATC TGG TTG CTA	49
Met Leu Met Leu Tyr Leu Val Pro Ile Trp Leu Leu	
1 5 10	
CTC ATT TCG CAA TGC AGT GGA AAA TCC GCG AAG AAA TGT GGT CTC AAT	97
Leu Ile Ser Gln Cys Ser Gly Lys Ser Ala Lys Lys Cys Gly Leu Asn	
15 20 25	
GAA AAA TTG GAC TGT GGC AAT CTG AAG GCA TGC GAG AAA AAG TGC AGC	145
Glu Lys Leu Asp Cys Gly Asn Leu Lys Ala Cys Glu Lys Lys Cys Ser	
30 35 40	

GAC	TTG	GAC	AAT	GAG	GAG	GAT	TAT	AAG	GAG	GAA	GAT	GAG	TCG	AAA	TGC	193
Asp	Leu	Asp	Asn	Glu	Glu	Asp	Tyr	Lys	Glu	Glu	Asp	Glu	Ser	Lys	Cys	
45					50					55					60	
CGA	TCA	CGT	GAA	TGT	AGT	CGT	CGT	GTT	TGT	GTA	TGC	GAT	GAA	GGA	TTC	241
Arg	Ser	Arg	Glu	Cys	Ser	Arg	Arg	Val	Cys	Val	Cys	Asp	Glu	Gly	Phe	
				65					70						75	
TAC	AGA	AAC	AAG	AAG	GGC	CAA	TGT	GTG	ACA	AGA	GAT	GAT	TGC	GAG	TAT	289
Tyr	Arg	Asn	Lys	Lys	Gly	Gln	Cys	Val	Thr	Arg	Asp	Asp	Cys	Glu	Tyr	
			80					85					90			
GAC	AAT	ATG	GAG	ATT	ATC	ACT	TTT	CCA	CCA	GAA	GAT	AAA	TGT	GGT	CCC	337
Asp	Asn	Met	Glu	Ile	Ile	Thr	Phe	Pro	Pro	Glu	Asp	Lys	Cys	Gly	Pro	
		95					100					105				
GAT	GAA	TGG	TTC	GAC	TGG	TGT	GGA	ACT	TAC	AAG	CAG	TGT	GAG	CGC	AAG	385
Asp	Glu	Trp	Phe	Asp	Trp	Cys	Gly	Thr	Tyr	Lys	Gln	Cys	Glu	Arg	Lys	
	110					115					120					
TGC	AAT	AAG	GAG	CTA	AGT	GAG	AAA	GAT	GAA	GAG	GCA	TGC	CTC	TCA	CGT	433
Cys	Asn	Lys	Glu	Leu	Ser	Glu	Lys	Asp	Glu	Glu	Ala	Cys	Leu	Ser	Arg	
125					130					135					140	
GCT	TGT	ACT	GGT	CGT	GCT	TGT	GTT	TGC	AAC	GAC	GGA	CTG	TAC	AGA	GAC	481
Ala	Cys	Thr	Gly	Arg	Ala	Cys	Val	Cys	Asn	Asp	Gly	Leu	Tyr	Arg	Asp	
				145					150					155		
GAT	TTT	GGC	AAT	TGT	GTT	GAG	AAA	GAC	GAA	TGT	AAC	GAT	ATG	GAG	ATT	529
Asp	Phe	Gly	Asn	Cys	Val	Glu	Lys	Asp	Glu	Cys	Asn	Asp	Met	Glu	Ile	
			160					165					170			
ATC	ACT	TTT	CCA	CCG	GAA	ACC	AAA	CAC	TGACCAAAGG	CTCTAACTCT	CGCTACAT					584
Ile	Thr	Phe	Pro	Pro	Glu	Thr	Lys	His								
		175					180									
AACGTCAGTG	CTTGAATTGC	CCCTTTACGA	GTTAGTAATT	TTGACTAACT	CTGTGTAATT											644
GAGCATTGTC	TACTGATGGT	GAAAATGAAG	TGTTCAATGT	CT												686

## (2) INFORMATION FOR SEQ ID NO:37:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 707 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

- (A) NAME/KEY: Coding Sequence
- (B) LOCATION: 34...576

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GAATTCCGCG GAATTCCGGT TGGCGGCAGA AAA ATG CTG ATG CTC TAC CTT GTT 54

SD-91426.1



## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence

(B) LOCATION: 31...309

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GAATTC	CGTA	CGACCT	ACTA	CTACT	CAACG	ATG	AAG	GCG	CTC	TAT	GTT	ATC	TCT	54		
						Met	Lys	Ala	Leu	Tyr	Val	Ile	Ser			
						1					5					
ATA	ACG	TTG	CTC	CTG	GTA	TGG	CAA	TGC	AGT	GCA	AGA	ACA	GCG	AGG	AAA	102
Ile	Thr	Leu	Leu	Leu	Val	Trp	Gln	Cys	Ser	Ala	Arg	Thr	Ala	Arg	Lys	
	10					15					20					
CCC	CCA	ACG	TGT	GGT	GAA	AAT	GAA	AGG	GTC	GAA	TGG	TGT	GGC	AAG	CAG	150
Pro	Pro	Thr	Cys	Gly	Glu	Asn	Glu	Arg	Val	Glu	Trp	Cys	Gly	Lys	Gln	
	25				30					35					40	
TGC	GAG	ATC	ACA	TGT	GAC	GAC	CCA	GAT	AAG	ATA	TGC	CGC	TCA	CTC	GCT	198
Cys	Glu	Ile	Thr	Cys	Asp	Asp	Pro	Asp	Lys	Ile	Cys	Arg	Ser	Leu	Ala	
				45					50						55	
TGT	CCT	GGT	CCT	CCT	GCT	TGC	GTA	TGC	GAC	GAC	GGA	TAC	TAC	AGA	GAC	246
Cys	Pro	Gly	Pro	Pro	Ala	Cys	Val	Cys	Asp	Asp	Gly	Tyr	Tyr	Arg	Asp	
			60						65					70		
ACG	AAC	GTT	GGC	TTG	TGT	GTA	CAA	TAT	GAC	GAA	TGC	AAC	GAT	ATG	GAT	294
Thr	Asn	Val	Gly	Leu	Cys	Val	Gln	Tyr	Asp	Glu	Cys	Asn	Asp	Met	Asp	
		75					80						85			
ATT	ATT	ATG	GTT	TCA	TAGGG	TTGAC	TGAAGA	ATCG	AACAAC	CGGT	GCACA	ACTTC				349
Ile	Ile	Met	Val	Ser												
		90														
TATGCT	TGAC	TATCT	TCTT	GCAT	CATGCA	AGTTT	AGCTA	GATAG	TGTAT	ATATT	AGCAA					409
GACCC	CTTGG	GGAGA	ATGAA	GCTT	CCCAAC	TATAT	TAAAT	CAATA	ACGTT	TTCG	CTTCAT					469
GTACAC	GTGC	TCAGC	CATT	CATAT	CCACT	CCTCA	CACTC	CATGA	AAGCA	GTGAA	ATGTT					529

## (2) INFORMATION FOR SEQ ID NO:39:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 361 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Necator americanus

## (ix) FEATURE:

(A) NAME/KEY: Coding Sequence  
 (B) LOCATION: 16...252

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

```

GCCAACTCTT CGAAC ATG ATT CGA GGC CTC GTT CTT CTT TCT CTC CTG TTT      51
      Met Ile Arg Gly Leu Val Leu Leu Ser Leu Leu Phe
        1             5             10

TGC GTC ACT TTT GCA GCG AAG AGA GAT TGT CCA GCA AAT GAG GAA TGG      99
Cys Val Thr Phe Ala Ala Lys Arg Asp Cys Pro Ala Asn Glu Glu Trp
      15             20             25

AGG GAA TGT GGC ACT CCA TGT GAA CCA AAA TGC AAT CAA CCG ATG CCA     147
Arg Glu Cys Gly Thr Pro Cys Glu Pro Lys Cys Asn Gln Pro Met Pro
      30             35             40

GAT ATA TGT ACT ATG AAT TGT ATC GTC GAT GTG TGT CAA TGC AAG GAG     195
Asp Ile Cys Thr Met Asn Cys Ile Val Asp Val Cys Gln Cys Lys Glu
      45             50             55

GGA TAC AAG CGT CAT GAA ACG AAG GGA TGC TTA AAG GAA GGA TCA GCT     243
Gly Tyr Lys Arg His Glu Thr Lys Gly Cys Leu Lys Glu Gly Ser Ala
      60             65             70             75

GAT TGT AAA TAAGTTATCA GAACGCTCGT TTTGTCTTAC ATTAGATGGG TGAGCTGATG  302
Asp Cys Lys

TATCTGTCAG ATAACTCTT TCTTCTAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA  361

```

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

```

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Asp Cys Gly
  1             5             10             15

Thr Gln Lys Pro Cys Glu Ala Lys Cys Asn Glu Glu Pro Pro Glu Glu
      20             25             30

Glu Asp Pro Ile Cys Arg Ser Arg Gly Cys Leu Leu Pro Pro Ala Cys
      35             40             45

Val Cys Lys Asp Gly Phe Tyr Arg Asp Thr Val Ile Gly Asp Cys Val
      50             55             60

Arg Glu Glu Glu Cys Asp Gln His Glu Ile Ile His Val
      65             70             75

```

## (2) INFORMATION FOR SEQ ID NO:41:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Val Cys Gly  
 1 5 10 15  
 Thr Lys Lys Pro Cys Glu Ala Lys Cys Ser Glu Glu Glu Glu Glu Asp  
 20 25 30  
 Pro Ile Cys Arg Ser Phe Ser Cys Pro Gly Pro Ala Ala Cys Val Cys  
 35 40 45  
 Glu Asp Gly Phe Tyr Arg Asp Thr Val Ile Gly Asp Cys Val Lys Glu  
 50 55 60  
 Glu Glu Cys Asp Gln His Glu Ile Ile His Val  
 65 70 75

## (2) INFORMATION FOR SEQ ID NO:42:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 74 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Arg Thr Ala Arg Lys Pro Pro Thr Cys Gly Glu Asn Glu Arg Val Glu  
 1 5 10 15  
 Trp Cys Gly Lys Gln Cys Glu Ile Thr Cys Asp Asp Pro Asp Lys Ile  
 20 25 30

Cys Arg Ser Leu Ala Cys Pro Gly Pro Pro Ala Cys Val Cys Asp Asp  
           35                          40                          45  
 Gly Tyr Tyr Arg Asp Thr Asn Val Gly Leu Cys Val Gln Tyr Asp Glu  
           50                          55                          60  
 Cys Asn Asp Met Asp Ile Ile Met Val Ser  
           65                          70

## (2) INFORMATION FOR SEQ ID NO:43:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 88 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Lys Pro Ser Glu Lys Glu Cys Gly Pro His Glu Arg Leu Asp Cys Gly  
   1                          5                          10                          15  
 Asn Lys Lys Pro Cys Glu Arg Lys Cys Lys Ile Glu Thr Ser Glu Glu  
           20                          25                          30  
 Glu Asp Asp Tyr Glu Glu Gly Thr Glu Arg Phe Arg Cys Leu Leu Arg  
           35                          40                          45  
 Val Cys Asp Gln Pro Tyr Glu Cys Ile Cys Asp Asp Gly Tyr Tyr Arg  
           50                          55                          60  
 Asn Lys Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe  
   65                          70                          75                          80  
 Met Glu Phe Ile Thr Phe Ala Pro  
                           85

## (2) INFORMATION FOR SEQ ID NO:44:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 87 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Arg Pro Glu Lys Lys Cys Gly Pro Gly Glu Arg Leu Ala Cys Gly Asn  
   1                          5                          10                          15

Lys Lys Pro Cys Glu Arg Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu  
                   20                  25                  30  
 Asp Asp Tyr Pro Glu Gly Thr Glu Arg Phe Arg Cys Leu Leu Arg Val  
                   35                  40                  45  
 Cys Asp Gln Pro Tyr Glu Cys Ile Cys Asp Asp Gly Tyr Tyr Arg Asn  
                   50                  55                  60  
 Lys Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met  
   65                  70                  75                  80  
 Glu Phe Ile Thr Phe Ala Pro  
                   85

## (2) INFORMATION FOR SEQ ID NO:45:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 86 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Arg Pro Glu Lys Lys Cys Gly Pro Gly Glu Arg Leu Asp Cys Ala Asn  
   1                  5                  10                  15  
 Lys Lys Pro Cys Glu Pro Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu  
                   20                  25                  30  
 Asp Asp Asp Val Glu Asp Thr Asp Val Arg Cys Leu Val Arg Val Cys  
                   35                  40                  45  
 Glu Arg Pro Leu Lys Cys Ile Cys Lys Asp Gly Tyr Tyr Arg Asn Lys  
                   50                  55                  60  
 Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met Glu  
   65                  70                  75                  80  
 Phe Ile Thr Phe Ala Pro  
                   85

## (2) INFORMATION FOR SEQ ID NO:46:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 86 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Arg Pro Glu Lys Lys Cys Gly Pro Gly Glu Arg Leu Asp Cys Ala Asn  
 1 5 10 15  
 Lys Lys Pro Cys Glu Pro Lys Cys Lys Ile Glu Thr Ser Glu Glu Glu  
 20 25 30  
 Asp Asp Asp Val Glu Glu Thr Asp Val Arg Cys Leu Val Arg Val Cys  
 35 40 45  
 Glu Arg Pro Leu Lys Cys Ile Cys Lys Asp Gly Tyr Tyr Arg Asn Lys  
 50 55 60  
 Lys Gly Glu Cys Val Thr Asp Asp Val Cys Gln Glu Asp Phe Met Glu  
 65 70 75 80  
 Phe Ile Thr Phe Ala Pro  
 85

## (2) INFORMATION FOR SEQ ID NO:47:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Lys Ser Leu Trp Asp Gln Lys Cys Gly Glu Asn Glu Arg Leu Asp Cys  
 1 5 10 15  
 Gly Asn Gln Lys Asp Cys Glu Arg Lys Cys Asp Asp Lys Arg Ser Glu  
 20 25 30  
 Glu Glu Ile Met Gln Ala Cys Leu Thr Arg Gln Cys Leu Pro Pro Val  
 35 40 45  
 Cys Val Cys Glu Asp Gly Phe Tyr Arg Asn Asp Asn Asp Gln Cys Val  
 50 55 60  
 Asp Glu Glu Glu Cys Asn Met Glu Phe Ile Thr Phe Ala Pro  
 65 70 75

## (2) INFORMATION FOR SEQ ID NO:48:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 89 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn Glu Tyr Phe  
 1 5 10 15  
 Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys Asn Glu Glu  
 20 25 30  
 Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys Leu Ile Arg  
 35 40 45  
 Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg  
 50 55 60  
 Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu Tyr Glu Asn  
 65 70 75 80  
 Met Glu Phe Ile Thr Phe Ala Pro Glu  
 85

## (2) INFORMATION FOR SEQ ID NO:49:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 82 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Val Pro Ile Cys Gly Ser Asn Glu Arg Tyr Ser Asp Cys Gly Asn Asp  
 1 5 10 15  
 Lys Gln Cys Glu Arg Lys Cys Asn Glu Asp Asp Tyr Glu Lys Gly Asp  
 20 25 30  
 Glu Ala Cys Arg Ser His Val Cys Glu Arg Pro Gly Ala Cys Val Cys  
 35 40 45  
 Glu Asp Gly Phe Tyr Arg Asn Lys Lys Gly Ser Cys Val Glu Ser Asp  
 50 55 60  
 Asp Cys Glu Tyr Asp Asn Met Asp Phe Ile Thr Phe Ala Pro Glu Thr  
 65 70 75 80  
 Ser Arg

## (2) INFORMATION FOR SEQ ID NO:50:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 84 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (vi) ORIGINAL SOURCE:
- (A) ORGANISM: Ancylostoma caninum
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn  
 1 5 10 15  
 Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp  
 20 25 30  
 Tyr Lys Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg  
 35 40 45  
 Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln  
 50 55 60  
 Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr  
 65 70 75 80  
 Phe Pro Pro Glu

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 84 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (vi) ORIGINAL SOURCE:
- (A) ORGANISM: Ancylostoma caninum
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn  
 1 5 10 15  
 Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp  
 20 25 30  
 Tyr Gly Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ile Gly  
 35 40 45  
 Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln  
 50 55 60  
 Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr  
 65 70 75 80  
 Phe Pro Pro Glu



## (2) INFORMATION FOR SEQ ID NO:52:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 83 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp Cys Gly Asn  
 1 5 10 15  
 Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser Glu Glu Tyr  
 20 25 30  
 Glu Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg Arg  
 35 40 45  
 Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Lys Cys  
 50 55 60  
 Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile Ile Thr Phe  
 65 70 75 80  
 Pro Pro Glu

## (2) INFORMATION FOR SEQ ID NO:53:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys  
 1 5 10 15  
 Gln Cys Glu Arg Lys Cys Asn Lys Glu Leu Ser Glu Lys Asp Glu Glu  
 20 25 30  
 Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Asn Asp  
 35 40 45  
 Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu Lys Asp Glu Cys  
 50 55 60  
 Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His

65

70

75

## (2) INFORMATION FOR SEQ ID NO:54:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

```

Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys
 1           5           10           15
Gln Cys Glu Arg Lys Cys Ser Glu Glu Leu Ser Glu Lys Asn Glu Glu
          20           25           30
Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Asn Asp
          35           40           45
Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu Lys Asp Glu Cys
          50           55           60
Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His
65           70           75

```

## (2) INFORMATION FOR SEQ ID NO:55:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

```

Lys Cys Pro Thr Asp Glu Trp Phe Asp Trp Cys Gly Thr Tyr Lys His
 1           5           10           15
Cys Glu Leu Lys Cys Asp Arg Glu Leu Thr Glu Lys Glu Glu Gln Ala
          20           25           30
Cys Leu Ser Arg Val Cys Glu Lys Ser Ala Cys Val Cys Asn Asp Gly
          35           40           45

```

Leu Tyr Arg Asp Lys Phe Gly Asn Cys Val Glu Lys Asp Glu Cys Asn  
 50 55 60

Asp Met Glu Ile Ile Thr Phe Ala Pro Glu Glu Thr Lys  
 65 70 75

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 78 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly Asn Tyr Lys  
 1 5 10 15  
 Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys Asn Glu Glu  
 20 25 30  
 Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val Cys Lys Asp  
 35 40 45  
 Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His Asp Glu Cys  
 50 55 60  
 Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys His  
 65 70 75

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 75 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Lys Ala Phe Pro Lys Cys Asp Val Asn Glu Arg Phe Glu Val Cys Gly  
 1 5 10 15  
 Asn Leu Lys Glu Cys Glu Leu Lys Cys Asp Glu Asp Pro Lys Ile Cys  
 20 25 30

Ser Arg Ala Cys Ile Arg Pro Pro Ala Cys Val Cys Asp Asp Gly Phe  
           35                                  40                                  45  
 Tyr Arg Asp Lys Tyr Gly Phe Cys Val Glu Glu Asp Glu Cys Asn Asp  
       50                                  55                                  60  
 Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys  
       65                                  70                                  75

## (2) INFORMATION FOR SEQ ID NO:58:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 77 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Arg Thr Val Lys Lys Cys Gly Lys Asn Glu Arg Tyr Asp Asp Cys Gly  
   1                                  5                                  10                                  15  
 Asn Ala Lys Asp Cys Glu Thr Lys Cys Gly Glu Glu Glu Lys Val Cys  
           20                                  25                                  30  
 Arg Ser Arg Glu Cys Thr Ser Pro Gly Ala Cys Val Cys Glu Gln Gly  
           35                                  40                                  45  
 Phe Tyr Arg Asp Pro Ala Gly Asp Cys Val Thr Asp Glu Glu Cys Asp  
       50                                  55                                  60  
 Glu Trp Asn Asn Met Glu Ile Ile Thr Met Pro Lys Gln  
       65                                  70                                  75

## (2) INFORMATION FOR SEQ ID NO:59:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 84 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Lys Ala Thr Met Gln Cys Gly Glu Asn Glu Lys Tyr Asp Ser Cys Gly  
   1                                  5                                  10                                  15

Ser Lys Glu Cys Asp Lys Lys Cys Lys Tyr Asp Gly Val Glu Glu Glu  
 20 25 30  
 Asp Asp Glu Glu Pro Asn Val Pro Cys Leu Val Arg Val Cys His Gln  
 35 40 45  
 Asp Cys Val Cys Glu Glu Gly Phe Tyr Arg Asn Lys Asp Asp Lys Cys  
 50 55 60  
 Val Ser Ala Glu Asp Cys Glu Leu Asp Asn Met Asp Phe Ile Tyr Pro  
 65 70 75 80  
 Gly Thr Arg Asn

## (2) INFORMATION FOR SEQ ID NO:60:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 58 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Heligmosomoides polygyrus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Lys Thr Cys Gly Pro Asn Glu Glu Tyr Thr Glu Cys Gly Thr Pro Cys  
 1 5 10 15  
 Glu Pro Lys Cys Asn Glu Pro Met Pro Asp Ile Cys Thr Leu Asn Cys  
 20 25 30  
 Ile Val Asn Val Cys Gln Cys Lys Pro Gly Phe Lys Arg Gly Pro Lys  
 35 40 45  
 Gly Cys Val Ala Pro Gly Pro Gly Cys Lys  
 50 55

## (2) INFORMATION FOR SEQ ID NO:61:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 61 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Necator americanus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

```

Lys Arg Asp Cys Pro Ala Asn Glu Glu Trp Arg Glu Cys Gly Thr Pro
 1           5           10           15
Cys Glu Pro Lys Cys Asn Gln Pro Met Pro Asp Ile Cys Thr Met Asn
          20           25           30
Cys Ile Val Asp Val Cys Gln Cys Lys Glu Gly Tyr Lys Arg His Glu
      35           40           45
Thr Lys Gly Cys Leu Lys Glu Gly Ser Ala Asp Cys Lys
 50           55           60

```

## (2) INFORMATION FOR SEQ ID NO:62:

## (i) SEQUENCE CHARACTERISTICS:

```

(A) LENGTH:      171 amino acids
(B) TYPE:        amino acid
(D) TOPOLOGY:    linear

```

(ii) MOLECULE TYPE: peptide

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma ceylanicum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

```

Lys Pro Asn Asn Val Met Thr Asn Ala Cys Gly Leu Asn Glu Tyr Phe
 1           5           10           15
Ala Glu Cys Gly Asn Met Lys Glu Cys Glu His Arg Cys Asn Glu Glu
      20           25           30
Glu Asn Glu Glu Arg Asp Glu Glu Arg Ile Thr Ala Cys Leu Ile Arg
      35           40           45
Val Cys Phe Arg Pro Gly Ala Cys Val Cys Lys Asp Gly Phe Tyr Arg
      50           55           60
Asn Arg Thr Gly Ser Cys Val Glu Glu Asp Asp Cys Glu Tyr Glu Asn
      65           70           75           80
Met Glu Phe Ile Thr Phe Ala Pro Glu Val Pro Ile Cys Gly Ser Asn
          85           90           95
Glu Arg Tyr Ser Asp Cys Gly Asn Asp Lys Gln Cys Glu Arg Lys Cys
      100           105           110
Asn Glu Asp Asp Tyr Glu Lys Gly Asp Glu Ala Cys Arg Ser His Val
      115           120           125
Cys Glu Arg Pro Gly Ala Cys Val Cys Glu Asp Gly Phe Tyr Arg Asn
      130           135           140
Lys Lys Gly Ser Cys Val Glu Ser Asp Asp Cys Glu Tyr Asp Asn Met
      145           150           155           160
Asp Phe Ile Thr Phe Ala Pro Glu Thr Ser Arg
          165           170

```

## (2) INFORMATION FOR SEQ ID NO:63:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 162 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide  
 (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn  
 1 5 10 15  
 Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp  
 20 25 30  
 Tyr Lys Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg  
 35 40 45  
 Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln  
 50 55 60  
 Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr  
 65 70 75 80  
 Phe Pro Pro Glu Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys  
 85 90 95  
 Gly Thr Tyr Lys Gln Cys Glu Arg Lys Cys Asn Lys Glu Leu Ser Glu  
 100 105 110  
 Lys Asp Glu Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys  
 115 120 125  
 Val Cys Asn Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu  
 130 135 140  
 Lys Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr  
 145 150 155 160  
 Lys His

## (2) INFORMATION FOR SEQ ID NO:64:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 162 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

```

Lys Ser Ala Lys Lys Cys Gly Leu Asn Glu Lys Leu Asp Cys Gly Asn
 1           5          10          15
Leu Lys Ala Cys Glu Lys Lys Cys Ser Asp Leu Asp Asn Glu Glu Asp
          20          25          30
Tyr Gly Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ile Gly
      35          40          45
Arg Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Gln
      50          55          60
Cys Val Thr Arg Asp Asp Cys Glu Tyr Asp Asn Met Glu Ile Ile Thr
      65          70          75          80
Phe Pro Pro Glu Asp Lys Cys Gly Pro Asp Glu Trp Phe Asp Trp Cys
          85          90          95
Gly Thr Tyr Lys Gln Cys Glu Arg Lys Cys Ser Glu Glu Leu Ser Glu
      100          105          110
Lys Asn Glu Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys
      115          120          125
Val Cys Asn Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Glu
      130          135          140
Lys Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr
      145          150          155          160
Lys His

```

(2) INFORMATION FOR SEQ ID NO:65:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 161 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma duodenale

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

```

Lys Ala Ala Lys Lys Cys Gly Leu Asn Glu Arg Leu Asp Cys Gly Asn
 1           5          10          15
Leu Lys Gln Cys Glu Pro Lys Cys Ser Asp Leu Glu Ser Glu Glu Tyr
      20          25          30

```



Glu Glu Glu Asp Glu Ser Lys Cys Arg Ser Arg Glu Cys Ser Arg Arg  
           35                          40                          45  
 Val Cys Val Cys Asp Glu Gly Phe Tyr Arg Asn Lys Lys Gly Lys Cys  
       50                          55                          60  
 Val Ala Lys Asp Val Cys Glu Asp Asp Asn Met Glu Ile Ile Thr Phe  
   65                          70                          75                          80  
 Pro Pro Glu Asp Glu Cys Gly Pro Asp Glu Trp Phe Asp Tyr Cys Gly  
                           85                          90                          95  
 Asn Tyr Lys Lys Cys Glu Arg Lys Cys Ser Glu Glu Thr Ser Glu Lys  
                          100                         105                         110  
 Asn Glu Glu Ala Cys Leu Ser Arg Ala Cys Thr Gly Arg Ala Cys Val  
          115                         120                         125  
 Cys Lys Asp Gly Leu Tyr Arg Asp Asp Phe Gly Asn Cys Val Pro His  
      130                         135                         140  
 Asp Glu Cys Asn Asp Met Glu Ile Ile Thr Phe Pro Pro Glu Thr Lys  
   145                         150                         155                         160  
 His

## (2) INFORMATION FOR SEQ ID NO:66:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 2 to 9  
                          is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 66:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1                          5

## (2) INFORMATION FOR SEQ ID NO: 67:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 2 to 9 is  
                          an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 67:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO:68:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa at locations 1 and 2 is an amino acid, provided that at least one of Xaa at locations 1 and 2 is Glu or Asp, Xaa in locations 3 to 8 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO:69:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Gly Phe Tyr Arg Asp  
1 5

(2) INFORMATION FOR SEQ ID NO:70:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Gly Phe Tyr Arg Asn  
1 5

(2) INFORMATION FOR SEQ ID NO:71:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Gly Tyr Tyr Arg Asp  
1 5

(2) INFORMATION FOR SEQ ID NO:72:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Gly Tyr Tyr Arg Asn  
1 5

(2) INFORMATION FOR SEQ ID NO:73:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Gly Leu Tyr Arg Asp  
1 5

(2) INFORMATION FOR SEQ ID NO:74:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: peptide  
(v) FRAGMENT TYPE: internal fragment  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:  
Glu Ile Ile His Val  
1 5

(2) INFORMATION FOR SEQ ID NO:75:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: peptide  
(v) FRAGMENT TYPE: internal fragment  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:  
Asp Ile Ile Met Val  
1 5

(2) INFORMATION FOR SEQ ID NO:76:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: peptide  
(v) FRAGMENT TYPE: internal fragment  
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:  
Phe Ile Thr Phe Ala Pro  
1 5

(2) INFORMATION FOR SEQ ID NO:77:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear  
(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Met Glu Ile Ile Thr  
1 5

(2) INFORMATION FOR SEQ ID NO:78:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 and 2 is  
an amino acid, provided that at  
least one Xaa is Glu or Asp.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Xaa Xaa Gly Phe Tyr Arg Asp  
1 5

(2) INFORMATION FOR SEQ ID NO:79:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 and 2  
is an amino acid, provided  
that at least one Xaa is Glu or  
Asp.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Xaa Xaa Gly Phe Tyr Arg Asn  
1 5

## (2) INFORMATION FOR SEQ ID NO:80:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 and 2 is an amino acid, provided that at least one Xaa is Glu or Asp.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Xaa Xaa Gly Tyr Tyr Arg Asp  
1 5

## (2) INFORMATION FOR SEQ ID NO:81:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 and 2 is an amino acid, provided that at least one Xaa is Glu or Asp.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Xaa Xaa Gly Tyr Tyr Arg Asn  
1 5

## (2) INFORMATION FOR SEQ ID NO:82:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 and 2 is an amino

acid, provided that at least one Xaa is  
Glu or Asp.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Xaa Xaa Gly Leu Tyr Arg Asp  
1 5

(2) INFORMATION FOR SEQ ID NO:83:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 83:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO:84:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 1 is an amino  
acid, preferably Leu; Xaa in  
location 2 is an amino acid; Xaa  
in location 3 is an amino acid,  
preferably Arg; Xaa in location  
4 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Xaa Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO:85:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 4  
 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Xaa Xaa Xaa Xaa  
 1

(2) INFORMATION FOR SEQ ID NO: 86:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 86:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO:87:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 87:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5



## (2) INFORMATION FOR SEQ ID NO:88:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

TCAGACATGT ATAATCTCAT GTTGG

25

## (2) INFORMATION FOR SEQ ID NO:89:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

AAGGCATACC CGGAGTGTGG TG

22

## (2) INFORMATION FOR SEQ ID NO:90:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (ix) FEATURE:

(D) OTHER INFORMATION: "R" stands for A or G; "N" stands for  
 any base; "Y" stands for C or T; and  
 "M" stands for A or C.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

AARCCNTGYG ARMGGAARTG Y

21

## (2) INFORMATION FOR SEQ ID NO:91:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (ix) FEATURE:

(D) OTHER INFORMATION: "W" stands for A or T; "R" stands for  
 A or G; "N" stands for any base; and

"Y" stands for C or T.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

TWRWANCCNT CYTTRCANAC RCA

23

(2) INFORMATION FOR SEQ ID NO:92:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: N-terminal fragment

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92:

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp  
1 5 10

(2) INFORMATION FOR SEQ ID NO:93:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: N-terminal fragment

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp  
1 5 10

(2) INFORMATION FOR SEQ ID NO:94:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (ix) FEATURE:

(D) OTHER INFORMATION: "R" stands for A or G; "N" stands for inosine; and "Y" stands for C or T.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:94:

AARGCNTAYC CNGARTGYGG NGARAAYGAR TGG

33

## (2) INFORMATION FOR SEQ ID NO:95:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

AATTCGCGGC CGCTTTTTTT TTTTTTTT

28

## (2) INFORMATION FOR SEQ ID NO:96:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

GGTGGCGACG ACTCCTGGAG CCCG

24

## (2) INFORMATION FOR SEQ ID NO:97:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: N-terminal fragment

## (vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:97:

Lys Ala Tyr Pro Glu Cys Gly Glu Asn Glu Trp Leu Asp Asp Cys Gly Thr  
 1 5 10 15

Gln Lys Pro  
 20

## (2) INFORMATION FOR SEQ ID NO:98:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

CGGAATTCCG

10

## (2) INFORMATION FOR SEQ ID NO:99:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:99:

TGGCCTAGCG TCAGGAGT

18

## (2) INFORMATION FOR SEQ ID NO:100:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

CCTGACGCTA GGCCATGG

18

## (2) INFORMATION FOR SEQ ID NO:101:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:101:

AGCGGATAAC AATTTACAC AGGA

24

## (2) INFORMATION FOR SEQ ID NO:102:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 66 base pairs  
(B) TYPE: nucleic acid

- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:102:

ATGTTCTCTC CAATTTTGTC CTTGGAAATT ATTTTAGCTT TGGCTACTTT GCAATCTGTC 60  
TTCGCT 66

(2) INFORMATION FOR SEQ ID NO:103:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 57 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

CAGCCAGGTA TCTCCACTAC CGTTGGTTCC GCTGCCGAGG GTTCTTTGGA CAAGAGG 57

(2) INFORMATION FOR SEQ ID NO:104:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 51 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:104:

CCTATCCGCG GAATTCAGAT CTGAATGCGG CCGCTCGAGA CTAGTGGATC C 51

(2) INFORMATION FOR SEQ ID NO:105:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 41 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:105:

GCTCGCTCTA GAAGCTTCAG ACATGTATAA TCTCATGTTG G 41

(2) INFORMATION FOR SEQ ID NO:106:

- (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (v) FRAGMENT TYPE: N-terminal fragment
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Ancylostoma caninum
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:106:

Lys Ala Tyr Pro Glu  
 1 5

(2) INFORMATION FOR SEQ ID NO:107:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 36 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:107:

GACCACTCTA GACAATGAAG ATGCTTTACG CTATCG

36

(2) INFORMATION FOR SEQ ID NO:108:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 23 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:108:

GTGGGAGACC TGATACTCTC AAG

23

(2) INFORMATION FOR SEQ ID NO:109:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 9 amino acids
  - (B) TYPE: amino acid
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide
- (v) FRAGMENT TYPE: N-terminal fragment
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:109:

Arg Thr Val Arg Lys Ala Tyr Pro Glu  
1 5

(2) INFORMATION FOR SEQ ID NO:110:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(v) FRAGMENT TYPE: N-terminal fragment

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:110:

Arg Thr Val Arg Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:111:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:111:

ATCCGAAGCT TTGCTAACAT ACTGCGTAAT AAG

33

(2) INFORMATION FOR SEQ ID NO:112:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:112:

TATGGGATGG CCGACTTGGC CTCCGCCTGA GCCTCCACCT TTATCCCAAT CCAAATAAGA 60

(2) INFORMATION FOR SEQ ID NO:113:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:113:

ATGGGATGGC CGACTTGGCC CTCCGCCTGA GCCTCCACCT TTATCCCAAT CCAAATAAGA 60

(2) INFORMATION FOR SEQ ID NO:114:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:114:

TATGGGATGG CCGACTTGGC CGATCCGCCT GAGCCTCCAC CTTTATCCCA ATCCAAATAA 60

(2) INFORMATION FOR SEQ ID NO:115:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 45 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:115:

AGGAGGGGAT CCGCGGCCGC GTGATATGGG ATGGCCGACT TGGCC 45

(2) INFORMATION FOR SEQ ID NO:116:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs



(B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:116:

24

CGCCAGGGTT TTCCAGTCA CGAC

(2) INFORMATION FOR SEQ ID NO:117:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:117:

28

GTTTCGAGTT CCGGGATATA TAAAGTCC

(2) INFORMATION FOR SEQ ID NO:118:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 5 is Arg, Pro or Lys.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:118:

Lys Pro Cys Glu Xaa Lys Cys  
 1 5

(2) INFORMATION FOR SEQ ID NO:119:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 is Val, Ile or Gln;  
 Xaa in location 4 is Lys, Asp, Glu or  
 Gln; Xaa in location 5 is Asp or  
 Glu; Xaa in location 7 is Phe or  
 Tyr.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:119:

Cys Xaa Cys Xaa Xaa Gly Xaa Tyr  
 1 5

(2) INFORMATION FOR SEQ ID NO:120:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 44 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:120:

GACCACTCTA GACCACCATG GCGGTGCTTT ATTCAGTAGC AATA

44

(2) INFORMATION FOR SEQ ID NO:121:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:121:

GCTCGCTCTA GATTATCGTG AGGTTTCTGG TGCAAAAAGTG

40

(2) INFORMATION FOR SEQ ID NO:122:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:122:

AAAGCAACGA TGCAGTGTGG TGAG

24

(2) INFORMATION FOR SEQ ID NO:123:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 47 base pairs  
 (B) TYPE: nucleic acid

(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:123:

GCTCGCTCTA GAAGCTTCAG TTTCGAGTTC CGGGATATAT AAAGTCC

47

(2) INFORMATION FOR SEQ ID NO:124:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 30 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:124:

GAGACTTTTA AATCACTGTG GGATCAGAAG

30

(2) INFORMATION FOR SEQ ID NO:125:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 33 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:125:

TTCAGGACTA GTTCATGGTG CGAAAGTAAT AAA

33

(2) INFORMATION FOR SEQ ID NO:126:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:126:

GCGTTTAAAG CAACGATGCA GTGTGGTG

28

(2) INFORMATION FOR SEQ ID NO:127:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 46 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:127:

CGCTCTAGAA GCTTCATGGG TTTCGAGTTC CGGGATATAT AAAGTC

46

(2) INFORMATION FOR SEQ ID NO:128:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 91 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Ancylostoma caninum

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:128:

Leu Val Ser Tyr Cys Ser Gly Lys Ala Thr Met Gln Cys Gly Glu Asn  
1 5 10 15  
Glu Lys Tyr Asp Ser Cys Gly Ser Lys Glu Cys Asp Lys Lys Cys Lys  
20 25 30  
Tyr Asp Gly Val Glu Glu Glu Asp Asp Glu Glu Pro Asn Val Pro Cys  
35 40 45  
Leu Val Arg Val Cys His Gln Asp Cys Val Cys Glu Glu Gly Phe Tyr  
50 55 60  
Arg Asn Lys Asp Asp Lys Cys Val Ser Ala Glu Asp Cys Glu Leu Asp  
65 70 75 80  
Asn Met Asp Phe Ile Tyr Pro Gly Thr Arg Asn  
85 90

(2) INFORMATION FOR SEQ ID NO: 129:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8  
is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 129:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 130:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6  
 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 130:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 131:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5  
 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 131:

Cys Xaa Xaa Xaa Xaa Cys  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 132:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4  
 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 132:

Cys Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 133:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 and 3  
is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 133:

Cys Xaa Xaa Cys  
1

(2) INFORMATION FOR SEQ ID NO: 134:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
to 21 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 134:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 135:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5 to 20 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 135:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa Xaa Xaa
                20

```

(2) INFORMATION FOR SEQ ID NO: 136:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5 to 19 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 136:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa Xaa

```

(2) INFORMATION FOR SEQ ID NO: 137:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5 to 18 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 137:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa

```

## (2) INFORMATION FOR SEQ ID NO: 138:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
 to 17 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 138:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa

## (2) INFORMATION FOR SEQ ID NO: 139:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
 to 16 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 139:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 140:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
 to 15 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 140:



Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 141:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 141:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 142:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
 to 13 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 142:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 143:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
to 12 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 143:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 144:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
to 11 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 144:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 145:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and 5  
to 10 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 145:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 146:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 146:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 147:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 147:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 148:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 148:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 149:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 149:

Cys Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 150:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 150:

Cys Xaa Xaa Xaa  
 1

## (2) INFORMATION FOR SEQ ID NO: 151:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and locations  
 4 to 15 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 151:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 152:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and locations 4 to 14 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 152:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 153:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and locations 4 to 13 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 153:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 154:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 154:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys  
 1 5

(2) INFORMATION FOR SEQ ID NO: 155:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6  
 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 155:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
 1 5

(2) INFORMATION FOR SEQ ID NO: 156:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 156:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 157:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 157:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 158:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 158:

Cys Xaa Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 159:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 159:

Cys Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 160:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 23 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 160:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 161:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 22 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 161:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 162:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 21 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 162:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15



Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 163:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 20 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 163:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 164:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 19 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 164:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 165:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 18 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 165:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 166:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 17 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 166:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO: 167:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 16 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 167:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 168:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 15 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 168:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 169:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 14 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 169:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 170:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 13 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 170:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 171:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 12 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 171:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 172:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 11 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 172:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 173:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 10 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 173:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 174:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 174:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 175:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 175:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 176:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 176:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 177:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 177:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 178:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 178:

Cys Xaa Xaa Xaa  
1

## (2) INFORMATION FOR SEQ ID NO: 179:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
 locations 4 to 15 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 179:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 180:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
 locations 4 to 14 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 180:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 181:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 181:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 182:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 182:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 183:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 183:

Cys Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 184:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 26 is an  
 amino acid.



## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 184:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

## (2) INFORMATION FOR SEQ ID NO: 185:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 25 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 185:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

## (2) INFORMATION FOR SEQ ID NO: 186:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 24 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 186:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 187:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 23 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 187:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 188:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 22 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 188:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 189:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 21 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 189:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 190:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 20 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 190:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 191:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 19 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 191:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa

## (2) INFORMATION FOR SEQ ID NO: 192:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 18 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 192:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa

## (2) INFORMATION FOR SEQ ID NO: 193:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 17 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 193:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa

## (2) INFORMATION FOR SEQ ID NO: 194:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 16 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 194:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 195:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 15 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 195:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 196:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 196:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 197:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 13 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 197:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 198:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 12 is an

amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 198:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 199:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 11 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 199:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 200:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 10 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 200:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 201:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 201:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 202:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 202:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 203:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 203:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 204:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids

(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 204:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 205:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 205:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 206:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 206:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
1 5



(2) INFORMATION FOR SEQ ID NO: 207:

(i) SEQUENCE CHARACTERISTICS:

SEQUENCE

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 207:

Cys Xaa Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 208:

(i) SEQUENCE CHARACTERISTICS:

SEQUENCE CHAIN

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 208:

Cys Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 209:

(i) SEQUENCE CHARACTERISTICS:

SEQUENCE CHARACTERISTICS

(A)	LENGTH:	23 amino acids
(B)	TYPE:	amino acid
(D)	TOPOLOGY:	linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 23 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 209:

(xi) SEQUENCE DESCRIPTION: SEQ ID:  
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1                      5                      10                      15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
                     20

(2) INFORMATION FOR SEQ ID NO: 210:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 22 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 210:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1                      5                      10                      15  
 Xaa Xaa Xaa Xaa Xaa Xaa  
                     20

(2) INFORMATION FOR SEQ ID NO: 211:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 21 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 211:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1                      5                      10                      15  
 Xaa Xaa Xaa Xaa Xaa  
                     20

(2) INFORMATION FOR SEQ ID NO: 212:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 20 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 212:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15  
Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 213:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 19 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 213:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15  
Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 214:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 18 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 214:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 215:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 17 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 215:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO: 216:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
locations 5 to 16 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 216:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 217:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 15 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 217:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

## (2) INFORMATION FOR SEQ ID NO: 218:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 14 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 218:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 219:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 13 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 219:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 220:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 12 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 220:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 221:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 11 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 221:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 222:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 10 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 222:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 223:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 223:

Cys Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 224:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 224:

Cys Xaa Xaa Xaa  
 1

(2) INFORMATION FOR SEQ ID NO: 225:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 225:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 226:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 226:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 227:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 227:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 228:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:



(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 15 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 228:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 229:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 14 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 229:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 230:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 230:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 231:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids

(B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 231:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 232:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 232:

Cys Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 233:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 26 is an  
 amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 233:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

## (2) INFORMATION FOR SEQ ID NO: 234:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 25 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 234:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

## (2) INFORMATION FOR SEQ ID NO: 235:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 24 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 235:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 236:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 23 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 236:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

(2) INFORMATION FOR SEQ ID NO: 237:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 22 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 237:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

(2) INFORMATION FOR SEQ ID NO: 238:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 21 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 238:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15 20

105

1                      5                      10                      15  
Xaa Xaa Xaa Xaa Xaa  
                    20

(2) INFORMATION FOR SEQ ID NO: 239:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 20 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 239:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1                      5                      10                      15  
Xaa Xaa Xaa Xaa  
                    20

(2) INFORMATION FOR SEQ ID NO: 240:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 19 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 240:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1                      5                      10                      15  
Xaa Xaa Xaa  
                    20

(2) INFORMATION FOR SEQ ID NO: 241:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 18 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 241:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 242:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 17 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 242:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO: 243:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 16 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 243:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 244:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 15 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 244:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 245:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 245:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 246:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 13 is an

amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 246:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 247:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 12 is an  
 amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 247:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 248:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 11 is an  
 amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 248:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 249:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment



## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 10 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 249:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 250:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 250:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 251:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 251:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 252:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid

- (D) TOPOLOGY: linear
- (v) FRAGMENT TYPE: internal fragment
- (ix) FEATURE:
  - (D) OTHER INFORMATION: Xaa in locations 2 to 7 is an amino acid.
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 252:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

- (2) INFORMATION FOR SEQ ID NO: 253:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 6 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (v) FRAGMENT TYPE: internal fragment
  - (ix) FEATURE:
    - (D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 253:

Cys Xaa Xaa Xaa Xaa Xaa  
 1 5

- (2) INFORMATION FOR SEQ ID NO: 254:
  - (i) SEQUENCE CHARACTERISTICS:
    - (A) LENGTH: 8 amino acids
    - (B) TYPE: amino acid
    - (D) TOPOLOGY: linear
  - (v) FRAGMENT TYPE: internal fragment
  - (ix) FEATURE:
    - (D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.
  - (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 254:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 255:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 255:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 256:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 256:

Cys Xaa Xaa Xaa Xaa Cys  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 257:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 257:

Cys Xaa Xaa Xaa Cys  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 258:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 23 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 258:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 259:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 22 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 259:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 260:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 21 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 260:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa Xaa Xaa
                20

```

## (2) INFORMATION FOR SEQ ID NO: 261:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 20 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 261:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa Xaa
                20

```

## (2) INFORMATION FOR SEQ ID NO: 262:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

## (v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

- (D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 19 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 262:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa

```

## (2) INFORMATION FOR SEQ ID NO: 263:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 18 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 263:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa

## (2) INFORMATION FOR SEQ ID NO: 264:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 17 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 264:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa

## (2) INFORMATION FOR SEQ ID NO: 265:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 16 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 265:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 266:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 15 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 266:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 267:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and locations 5 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 267:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 268:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 13 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 268:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 269:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 12 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 269:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 270:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 11 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 270:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10



## (2) INFORMATION FOR SEQ ID NO: 271:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 10 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 271:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 272:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 272:

Cys Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 273:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 273:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 274:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 274:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 275:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 275:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 276:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 276:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 277:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 15 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 277:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 278:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 14 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 278:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 279:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 13 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 279:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 280:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 280:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 281:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 281:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 282:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
 an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 282:

Cys Xaa Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 283:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 26 is an  
 amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 283:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20 25

## (2) INFORMATION FOR SEQ ID NO: 284:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 25 is an  
 amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 284:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
                   20                  25

(2) INFORMATION FOR SEQ ID NO: 285:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 24 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 285:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
   1                  5                  10                  15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
                   20

(2) INFORMATION FOR SEQ ID NO: 286:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 23 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 286:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
   1                  5                  10                  15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
                   20

(2) INFORMATION FOR SEQ ID NO: 287:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 22 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 287:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa  
 20

(2) INFORMATION FOR SEQ ID NO: 288:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 21 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 288:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa  
 20

(2) INFORMATION FOR SEQ ID NO: 289:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 20 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 289:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa Xaa Xaa  
20

(2) INFORMATION FOR SEQ ID NO: 290:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 19 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 290:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 291:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 18 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 291:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 292:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
(B) TYPE: amino acid



(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 17 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 292:

Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
1				5					10					15	

Xaa

(2) INFORMATION FOR SEQ ID NO: 293:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 16 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 293:

Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
1				5					10					15	

(2) INFORMATION FOR SEQ ID NO: 294:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 15 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 294:

Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
1				5					10				15	

(2) INFORMATION FOR SEQ ID NO: 295:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 295:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 296:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 13 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 296:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 297:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 12 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 297:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 298:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 11 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 298:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 299:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 10 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 299:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 300:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 300:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 301:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 301:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 302:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 302:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 303:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an

amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 303:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 304:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is an  
amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 304:

Cys Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 305:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is an  
amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 305:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 306:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 3 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and 3 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 306:

Cys Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 307:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 307:

Cys Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 308:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 308:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 309:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 309:

Cys Xaa Xaa Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 310:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 310:

Cys Xaa Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 311:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 311:

Cys Xaa Xaa Xaa Cys  
1 5

(2) INFORMATION FOR SEQ ID NO: 312:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 23 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 312:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 313:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 22 is an amino  
 acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 313:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 314:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 21 is an amino  
 acid.



(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 314:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa Xaa Xaa Xaa
                20

```

(2) INFORMATION FOR SEQ ID NO: 315:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 20 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 315:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa Xaa Xaa
                20

```

(2) INFORMATION FOR SEQ ID NO: 316:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 19 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 316:

```

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1             5             10             15
Xaa Xaa Xaa

```

(2) INFORMATION FOR SEQ ID NO: 317:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 18 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 317:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa

(2) INFORMATION FOR SEQ ID NO: 318:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 17 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 318:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa

(2) INFORMATION FOR SEQ ID NO: 319:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 16 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 319:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 320:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 15 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 320:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 321:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 14 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 321:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 322:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 13 is an amino

acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 322:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 323:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 12 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 323:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 324:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 11 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 324:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 325:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 1 to 3 and  
 locations 5 to 10 is an amino  
 acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 325:

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

## (2) INFORMATION FOR SEQ ID NO: 326:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 326:

Cys Xaa Xaa Xaa Xaa  
 1 5

## (2) INFORMATION FOR SEQ ID NO: 327:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
 an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 327:

Cys Xaa Xaa Xaa  
 1

## (2) INFORMATION FOR SEQ ID NO: 328:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 328:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 329:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 5 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 5 is  
an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 329:

Cys Xaa Xaa Xaa Xaa  
1 5

## (2) INFORMATION FOR SEQ ID NO: 330:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 4 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 4 is  
an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 330:

Cys Xaa Xaa Xaa  
1

(2) INFORMATION FOR SEQ ID NO: 331:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 15 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 331:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 332:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in location 2 and  
locations 4 to 14 is an amino  
acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 332:

Cys Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 333:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 333:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 334:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 334:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 335:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is  
an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 335:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 336:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 26 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment



## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 26 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 336:

```

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      20           25

```

## (2) INFORMATION FOR SEQ ID NO: 337:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 25 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 337:

```

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      20           25

```

## (2) INFORMATION FOR SEQ ID NO: 338:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 24 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 24 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 338:

```

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1           5           10           15
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

```

## (2) INFORMATION FOR SEQ ID NO: 339:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 23 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 23 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 339:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 340:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 22 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 22 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 340:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 20

## (2) INFORMATION FOR SEQ ID NO: 341:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 21 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 341:

```
Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1      5      10      15
Xaa Xaa Xaa Xaa Xaa
      20
```

## (2) INFORMATION FOR SEQ ID NO: 342:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 20 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 342:

```
Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1      5      10      15
Xaa Xaa Xaa Xaa
      20
```

## (2) INFORMATION FOR SEQ ID NO: 343:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 19 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 343:

```
Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1      5      10      15
Xaa Xaa Xaa
      20
```

## (2) INFORMATION FOR SEQ ID NO: 344:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 18 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 344:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa Xaa

## (2) INFORMATION FOR SEQ ID NO: 345:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 17 is an amino acid.

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 345:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

Xaa

## (2) INFORMATION FOR SEQ ID NO: 346:

## (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

## (ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 16 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 346:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 347:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 15 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 347:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10 15

(2) INFORMATION FOR SEQ ID NO: 348:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 14 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 14 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 348:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 349:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 13 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 349:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 350:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 12 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 350:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 351:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 11 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 351:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10

(2) INFORMATION FOR SEQ ID NO: 352:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 10 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 352:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 353:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 9 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 353:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 354:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids  
 (B) TYPE: amino acid  
 (D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 8 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 354:

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 1 5

(2) INFORMATION FOR SEQ ID NO: 355:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 7 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 355:

Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

(2) INFORMATION FOR SEQ ID NO: 356:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids  
(B) TYPE: amino acid  
(D) TOPOLOGY: linear

(v) FRAGMENT TYPE: internal fragment

(ix) FEATURE:

(D) OTHER INFORMATION: Xaa in locations 2 to 6 is an amino acid.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 356:

Cys Xaa Xaa Xaa Xaa Xaa  
1 5